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MEDICAL EDUCATION IN CANADA

THE TEACHING OF MEDICINE — A SYMPOSIUM*

1. THE TEACHING OF CLINICAL MEDICINE

R. R. STRUTHERS, M.D., *Toronto*

MY APPEARANCE on your program this afternoon should be appreciated as a gracious recognition by your chairman of the fact that the Faculty of Medicine at McGill has been taking a rather hard look at its teaching curriculum, and that I have had the privilege of being concerned in this review; for your President's courtesy I am grateful.

The few points which I wish to emphasize in my brief remarks are, *firstly,* that I am concerned with the retention of the preeminence of the teaching of internal medicine in the preparation of the student for the practice of his profession; in the words of Professor Loeb of Columbia, this is concerned specifically with the preparation of the physician for the carrying of the scientific aspects of medicine to the bedside of the patient. To achieve this result, the teaching of both the science and the art of medicine by teachers of internal medicine is paramount. *Secondly,* I among many have been concerned over the apparent derogation of the place of the teaching of internal medicine in the curriculum during recent years; it has seemed to some of us that, with the introduction of each new discipline or specialty or sub-specialty into the clinical curriculum, the hours of student time devoted to bedside medicine have been seriously whittled away; it is my hope that, as a result of the endeavours of our professors of medicine, the teaching of internal medicine may again assume its rightful place in the scale of importance in student instruction. *Thirdly,* in our teaching of internal medicine, and this applies also to other branches of instruction, methods of instruction should be adopted and enforced which will ensure that the medical student is an active participant in his own education. Unhappily, some of our clinical teachers tend to convert either the bedside or out-patient periods of clinical instruction into a learned monologue, which is essentially didactic and almost completely prevents the student becoming an active participant in the situation. Granted that from the teacher's point of view this may be a fairly satisfactory experience, but from the student's point of view it is unlikely to inculcate the spirit of curiosity and of critical enquiry necessary for the future satisfactions inherent in the practice of medicine. While some may not look askance at the statement that during the educational process the student is likely to learn and retain those ideas in which he becomes emotionally interested, and from which he derives certain satisfactions, I cannot wholly subscribe to this view, feeling that there is an immense amount of factual information which the student must, willy-nilly, emotionally or otherwise observe and retain; these are the building blocks from which the science and art derive. However, many of us feel that something more than a mere courtesy bow must be paid to the obvious fact that those students who participate in clinical sessions do retain more of their experience than those who are passive receptacles for didactic teaching. Whether such participation should incorporate so-called "comprehensive teaching", "family care", or "preceptorships" is something on which there is as yet no evident agreement. I hesitate to intrude upon the topic chosen for particular attention by Professor Lennox Bell, namely the use of out-patient facilities for medical student instruction, other than to offer the comment that with the increasing importance of the ambulatory patient in medical practice and *pari passu* in the field of medical school teaching, medical student instruction in the out-patient departments should perhaps be made the function of the senior rather than the junior medical teacher; the voice of authority on questions of diagnosis and therapy should not always be available only to the student working in the wards. *Fourthly,* I would dare to call to your attention, perhaps needlessly, the similarity between the process by

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which medical diagnosis is achieved and the legal process by which judgment or decision is arrived at. I have the impression that students in the Faculty of Law are either more adept or better trained in the discovering of evidence, the relation of the procedure to previous judgments and their interpretation, than are our medical students in the securing of an adequate and detailed history both of the physical illness and the environmental circumstances related thereto, in the assessment of objective signs and their interpretation, all of which must form the background for an intelligent summation of any particular case and the eventual judgment which we call diagnosis. While all such procedures must of necessity be time-consuming, I would hazard a guess that members of the legal profession, because of their background of training, complain less of the pressure of "time" than do our own confrères. *Fifthly,* while teachers in medical schools are fairly unanimous that, considering the extent of the field which we now call "medicine", and the constant increase in scientific knowledge which will possibly accelerate, it is patently impossible, during the student's brief experience in the medical school, to instruct him in all the diseases and conditions which he may encounter during his life in medicine; this we call "coverage", and it seems to me quite evident that complete coverage is impossible. However, I do feel strongly that this attitude to our teaching is not made sufficiently clear to the student, so that either on examination or later he may feel or experience resentment that some topics in medicine were not adequately presented; the student must be made aware, from the beginning of his medical school career, that much of what he learns during that period must depend on his own endeavours as a student, as a laboratory neophyte, as an observer in the wards, and as a reader, so far as time and opportunity permit, of current literature.

Finally, it is appreciated that the teacher is much more important than the curriculum in the teaching of internal medicine, and that the quality of the student accepted into the medical school is the most important of all, since "learning" continues to be more important than "teaching".

25 Whitehall Road.

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2. THE TEACHING OF CLINICAL MEDICINE

RONALD V. CHRISTIE, M.D.,* *Montreal*

WHAT PRINCIPLES you apply to the teaching of clinical medicine obviously depend on what you want to teach, and I will first say a word on what I think should be the objectives. The orthodox view, with which I agree, is that the first objective should be to teach the student the methods or skills of clinical medicine which can be practised by the bedside. This is mainly concerned with the technique of eliciting facts, taking an accurate history and demonstrating physical signs. In most medical schools this is started in the second year and the majority of students welcome this practical approach to medicine with great enthusiasm. But the student never gets very far at this stage because the patterns of disease are still unknown to him and he is therefore denied the chief satisfaction in eliciting symptoms and signs, which is their interpretation. It is the universal complaint of clinical teachers that by the time they reach third year, students have forgotten the clinical techniques they were exposed to in the second year. It is in the third year itself that the student should get his first real chance of becoming proficient in these methods. If he could master them then, he would have confidence in examining patients, he would enjoy practising the methods he has learned, and would continue to learn clinical medicine whether he was doing surgery, obstetrics or any specialty. This was usually true twenty years ago but, because of the various trends which Dr. Struthers has mentioned, what is more often true today is that at the end of his third year he is still entirely without confidence. Examination of the patient gives him no satisfaction and his natural reaction tends to be to turn to the laboratory for his diagnosis rather than to the bedside. In many medical schools the unfortunate student only has about six weeks of clinical instruction in the third year, which is wholly inadequate. As Dr. Struthers has suggested, the pendulum is now swinging back, and if you examine many of the experimental curricula in the U.S.A. you will find that an important feature is more clinical medicine, much of it in the third year.

The second objective is to teach the student how to analyze the data he has elicited. In this respect the academic discipline of clinical medicine is much maligned by the purer sciences and yet no one can deny that clinical medicine demands the logical faculty, that it emphasizes the value and use of reliable evidence and that it encourages the checking of evidence by precise methods. If properly taught it should stimulate a spirit of inquiry and a realization of how little we really know. I am sure it is true that clinical medicine can be an excellent academic discipline, but I wonder how often it is taught in this way. The difficulty is that a fairly large part of clinical medicine is still dependent on the ability to detect the patterns and sequences of disease and to discern and develop analogies. Just because this part of medicine is not scientific in the true sense of the word does not mean that it is not academic. It requires the logical grouping of symptoms and signs into patterns and sequences we call diagnosis and their translation into terms of rational treatment and prognosis. If

*Professor of Medicine, McGill University; Physician-in-Chief, Royal Victoria Hospital.

you like, you can call this part of clinical medicine the practical art of medicine. The other portion which has expanded enormously in our lifetime is what can be called the applied science of clinical medicine. Here the patient's complaints can be analyzed in terms of their physiological basis, diagnosis is not just a matter of analogy but is based on proven etiology, and treatment is based on controlled experiment. I am sure that it is important that the student should be taught to differentiate the applied science in medicine from what is a practical art. It is when the practical art of medicine pretends to be a science that you get quackery. It is equally true that to turn to the laboratory for a diagnosis without a careful history or a reliable examination of the patient is wholly unscientific.

I will just mention at this point that in the hands of a first-class teacher this objective—the analysis of data—can be dealt with very effectively in the clinical lecture. This is an economical way of using your best teachers and I think it should be expanded rather than contracted as is being done in some medical schools.

The last objective and not the least important is to develop a proper attitude on the part of the student to the patient. A great deal has been said about this, much of it on a lofty intellectual plane, but my own opinion is that you can only inculcate the right attitude by placing the student in an environment where he sees it constantly practised by nurses, by resident staff and by the attending staff. The atmosphere should be efficient and kindly and should illustrate the fact that the patients' interests come first. In other words, a teaching hospital should be a first-class hospital.

These are the principles involved in the teaching of clinical medicine as I see them, and the main contribution which the deans can make is to give to medicine enough of the student's time for the job. The way the course is planned also matters a little, but what matters more is the selection of good teachers who can stimulate the student in the various directions I have discussed. The ideal teacher would be the first-class physician who is also a first-class scientist and who can stimulate the student's interest and enthusiasm. These are very rare birds, but physicians who are excellent teachers in their own area are not so rare.

In most medical schools there are now two types of clinical teachers. There is the larger group whose bread and butter comes from the practice of medicine. They have had some experience of research, or should have had, but almost all of their time is devoted to the care of the sick. Among this group can usually be found some magnificent clinical teachers who can demonstrate to students how to use clinical knowledge, and how to approach a clinical problem by deduction and analogy. The other type of clinical teacher is primarily interested in research and an academic career. He probably does some practice within the precincts of the hospital, he should be a good clinician but he is in no sense a family doctor. He should know more about the physiology of his own particular field of interest than most physiologists and he is therefore in an ideal position to bring the physiological approach to medicine. I believe that every department of medicine should contain some teachers of this type. They are necessary to maintain an atmosphere of inquiry and research among the other clinicians and they stimulate the student by demonstrating the application of the preclinical sciences to medicine and by stressing the scientific approach to disease. Unfortunately, just as a clinical appointment to a teaching hospital is usually based on clinical ability rather than teaching ability, so the clinical scientist is usually appointed because of scientific ability. In both groups you will find poor teachers and what makes it more difficult is that many of these are in the senior ranks. It is a tradition in many medical schools that senior physicians should take their turn in teaching, and any break from this tradition is taken as a personal insult by the person concerned. It would take a social revolution to break this pernicious system in Europe but it can be done in Canada and the unfortunate chairman of the department of medicine is presumably the person to do it. It is not at all difficult to find out who are good teachers. Many of them are among the younger ranks, and it is not easy to displace those of their seniors who are less fit for the job. Here I think the deans could help in several ways. In particular they could insist that this weeding-out process is done in all clinical departments so that it is accepted as a matter of general policy rather than the unpleasant whim of an individual chairman.

As you can see, I have fairly conservative views on the teaching of clinical medicine. I think the students should visit the homes of selected patients so that they can see for themselves the social implications of disease. I also believe they should have some clinical responsibility under careful supervision, but I have not been impressed with some of the experiments I have seen in the U.S.A. which appear to me to be teaching the student to run before he can walk. I also believe of course in the tutorial system. The main point which I hope I have made is that clinical medicine in the hands of a *good* teacher can be a stimulating academic discipline.

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3. THE PLACE OF THE BASIC MEDICAL SCIENCES IN CLINICAL EDUCATION

A. S. V. BURGEN, M.D.,* *Montreal*

NOT SO MANY YEARS AGO few clinicians were willing to concede that the basic medical sciences

*Department of Physiology, McGill University, Montreal.

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(except pathology and bacteriology) had any significant role in the conduct of clinical medicine. Physiology, biochemistry and pharmacology were considered to be far removed from practical life, delightful (or scarifying) intellectual exercises conducted in a rarefied atmosphere. In the last two decades a violent reversal of this attitude has occurred. Clinicians have witnessed an astonishingly rapid and fruitful application of basic science knowledge to human disease. Much of this new knowledge has been built on a foundation laid by experimental work in animals, but even more of it has come from experiments in man. The human subject in health or disease often provides information that it would be difficult or impossible to obtain in animals.

The productiveness of the basic science approach in the clinical field has led university departments of medicine to create within themselves active and highly competent subdepartments of physiology, biochemistry, biophysics, etc. This has resulted in the paradox that the outstanding success of the basic science approach to clinical medicine has excluded the basic science departments of the medical schools from the clinical field more completely than before. That geographical features may contribute to this exclusion is self-evident—people who meet only at Faculty meetings are unlikely to start collaborating—but much of this situation must also be blamed on the indifference of the basic scientist.

While these developments may be viewed with enthusiasm by the clinician, they contain the seeds of the gravest peril for the future of the basic science departments. Because of the ease with which well-trained clinical research workers can enter lucrative fields of practice, and the restrictiveness in the programs set up by the Royal Colleges for the training of specialists (which make it imperative for the graduate to stay close to the patient for his first five years), research in a clinical department has become a much more promising and flexible career than research in a basic science department. In addition, funds are more easily obtained for research in hospitals than in basic science departments, so that clinical research units are generally better staffed and equipped than their counterparts in the preclinical subjects. Who can blame our most able graduates if when choosing a research career they see the very obvious advantages of carrying this on in a clinical department? As a further consequence of this new distribution of talents, in many medical schools the clinical scientists have taken over a large part of the basic science teaching program. Correspondingly, basic science departments are having increasing difficulty in recruiting staff suitable for playing an effective role in teaching medical students.

In my view these developments threaten with extinction the basic science departments as we know them. Perhaps this is "a consummation devoutly to be wish'd"; perhaps the independent department of physiology or biochemistry within a medical school has served its term and may be cast into oblivion.

There are some reasons, however, for thinking that these departments do make some contribution not easily duplicated by the clinical departments. It is also a common observation in other branches of science that overemphasis on the applied aspects of a subject with neglect of the more basic ones leads eventually to a "deterioration" in standards. The effect is a subtle one and it is not easy to supply chapter and verse to substantiate it. The analogy with engineering schools is perhaps a fair one and in this field there is rather wide agreement that the quality of a school's graduates is closely dependent on the quality of the mathematics, physics and chemistry departments in which its students are trained. If the only kind of physics taught in an engineering school is that which is directly applicable to current engineering practice, this would form a very uncertain preparation for work in a rapidly developing field of engineering, even though the engineer is well supplied with working guides to new developments (cf. the pamphlets supplied by the pharmaceutical houses). The biological sciences have been slow in developing their theoretical aspects, but there are indications that new generalizations of great significance for clinical medicine are emerging; it will be from the basic science departments that most of these advances will come. Furthermore, it is still true that many fields of medical research can be better explored with animal rather than human experimental material. Finally it must be remembered that the training of many medical auxiliaries (hospital biochemists, bacteriologists, physiotherapists), as well as key personnel required to assist the clinical research worker, has been the duty of the basic science departments. Are the clinical departments ready to take over this task too?

If it is agreed that an attempt should be made to salvage the basic science departments, what measures are likely to accomplish this? Somehow the chasm between them and the clinic must be spanned. One possibility may be by individuals holding dual appointments in basic science and clinical departments. Such an appointment does not attain its full potentialities unless the appointee is thoroughly committed to the activities of both departments in a research and supervisory sense as well as in teaching. It is often objected that this type of appointment is likely to be a temporary one, as the strain of riding two horses simultaneously sooner or later leads to the abandonment of one of the steeds for the security of the other. This does not seem to me a serious disadvantage, because while the liaison continues it will bear fruit. A second device, perhaps less effective, is the teaching sequence in which a basic scientist or a clinical scientist teaches both the normal and pathological aspects of a subject and thus provides

continuity for both the student and the departments. It is essential that this scheme should be a two-way one either permitting a basic scientist to go forward into the clinical years or a clinician to come back into the earlier years. I cannot imagine any Canadian medical school having much difficulty in finding individuals suitable for this purpose.

A third device that has been proposed is to give an elective "recent advances" course in the final undergraduate year. In this course basic scientists would discuss advances in their subjects from the purely scientific point of view as well as considering possible points of application. This course would be an intrusion into the closely guarded fourth year and its success might be measured more by the extent to which the sessions were attended by clinical teachers than the appeal to senior students.

Lastly it must not be forgotten that at least part of the troubles that have beset the basic science departments are financial. If the salaries that could be offered to young graduates bore a more realistic relation to the income from practice, a few men might consider the possibility of becoming basic scientists.

It may be that my prognostications for the health of the basic science departments are too gloomy, or that the remedies suggested are only palliative, but it is well that the problem should be faced while there is yet time.

4. TEACHING OF INTERNAL MEDICINE

R. C. DICKSON, M.D.,* *Halifax, N.S.*

THE AIMS as outlined by Dr. Christie are virtually the same as those which were felt to be important at Dalhousie University, though they differ in some slight respects. They are:

(a) To teach the technique of examination of the patient in the broadest sense.

(b) To teach the application of the knowledge of basic sciences to the diagnosis and treatment of disease.

(c) To teach the student to think like a doctor.

It must be accepted that at the present time it is impossible to expose a student to the whole available knowledge of internal medicine in the time provided. One is faced, then, with the choice of teaching in a dogmatic fashion the material considered most important or adopting a different approach. If the latter choice is made, the third aim, "to teach the student to think like a doctor", becomes of paramount importance. This having been accepted at Dalhousie, teaching has been arranged to try to foster this aim. To do this, teaching must encourage and indeed even demand thought and effort on the part of the student.

To achieve these objects, the following plan has been adopted. In the second medical year, the student is taught to examine the patient. From the first, the application of basic science to the interpretation of symptoms and signs is stressed. An effort is made to teach the student to interpret the data collected by examination of the patient in terms of disturbance of function of an organ or organ system. Such disturbance can then be explained on the basis of some pathological process, emotional disturbance or combination of the two.

In the third year, the time available is used in bedside teaching, theatre clinics, group tutorials and a strictly limited number of lectures. It would appear that bedside teaching is the most valuable single method, particularly where the students have an opportunity of examining the patients first, and then of presenting their findings to a teacher in small groups. At group tutorials, a previously announced subject is explored with a group of students, using the Socratic method. By this means, it is hoped to encourage good reading habits and to encourage the student to look for knowledge himself, rather than depend on the spoken word of his teacher. Theatre clinics at which a patient's history and findings are presented and the important physical findings demonstrated are considered thought-provoking, particularly if the Socratic method is applied and questions directed to students throughout the course of presentation.

If the time is devoted to those forms of teaching which are most likely to be provocative of thought, it necessitates a reduction of time spent on didactic lectures. The didactic lecture is not as a rule thought-provoking, but rather tends, by the undue authority which a teacher's word carries with the student, to suppress independent thinking. It is hoped that reduction in didactic lectures is more than justified by encouragement of the student to spend more time in those activities whose continuation provide the most important part of continuing medical education, namely, good reading habits, applying and increasing knowledge of basic science, learning from patients, in short, self-teaching by the doctor.

In the fourth medical year, teaching takes the form of a clinical clerkship in which the student works both in the outpatient department and the indoor medical wards. There is only one didactic period a week, provided by the Department of Medicine, and this takes the form of a clinical-pathological conference. At ward rounds and conferences, the principles of teaching established in second and third years are continued, with emphasis placed on learning from patients and reading planned in relation to patients seen.

*Professor of Medicine, Dalhousie University.

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5. TEACHING OF INTERNAL MEDICINE

J.-B. JOBIN, M.D.,* *Quebec, Que.*

DR. STRUTHERS has asked me to make a few comments on my point of view in the teaching of internal medicine. It gives me great pleasure to do so, but I must point out that what I am about to say has no other value than a personal opinion, and that of a man who has nothing but clinical teaching experience.

Firstly, is there any idea or teaching method specific to the Quebec region? I do not believe so. We have the reputation of having been trained by French methods and according to a clinical teaching system which to some seems out-of-date today. I do not believe this to be completely true, because many of our present-day teachers have received their complete postgraduate training in North America. As for those who went to Europe, all but a few also spent at least a year in an English sphere, either in the United States or Canada. This is a point I strongly insist on because I am convinced that a French Canadian must possess a knowledge of the English language, so as to be perfectly at ease with his Canadian and American English-speaking colleagues, with whom he must maintain a professional relationship all his life.

The teaching of internal medicine, like all teaching, consists of theory and practice, meaning lectures at the medical school and clinical classes at the hospital.

The modern tendency is to cut down on lectures in favour of the clinical teaching. I approve this method, but may I point out that to my mind we should avoid exaggeration in this matter, because I feel it necessary to retain a minimum of theoretical teaching covering all the essential questions of internal medicine, questions that we must teach thoroughly to all our students, the last part of the subject being covered by the clinical teaching and personal studies of the student.

There is also another reason for this. Medical schools which have no university hospital must give their clinical teaching in affiliated teaching hospitals, and the method of teaching differs from one hospital to another. Hence theoretical teaching is cut down too much. I believe that we will fail in our obligations by not favouring equally all our students.

It is essential to use the outdoor department for clinical teaching, because this is the place where the student sees the patient as he will present himself in his consulting office later on; he will thus gain a better understanding of the social aspect of medicine. We must use all the possibilities the hospital offers to reach this goal, regardless of the material or administrative difficulties encountered. Students must have already received a training enabling them to profit from this attendance and they must attend in small groups. I believe that it is the fourth-year and fifth-year students who gain the most from this teaching.

Should the clerkship be introduced in the third year? If by clerkship we mean that the student must spend the whole day at the hospital, I must say that this does not exist at Laval and I do not believe that it is feasible for the third-year students. In theory, I believe that it is a good thing; in practice, I believe we could achieve this in the fourth year on condition that lectures are cut down a little, and provided that there are a sufficient number of full-time clinical professors. But this has not been achieved yet in our sphere.

The importance attached to basic sciences is evident, and can be judged by the importance given to the teaching of these subjects in the preclinical years. The problem lies in maintaining interest during the clinical years, because this knowledge permits us to understand the physiopathological phenomena which set in motion the illness at the cell level, and to promote study of the scientific aspect of illness.

We could reach this goal by organizing debates between clinicians, physiologists, and pharmacologists, but this is possible only if we have the facilities of a university hospital. Those without such a hospital may maintain this interest at clinics by using a greater number of young teachers, those who have just made a review of basic sciences during their postgraduate training and who understand medicine from this angle. They are well prepared to give this training and I believe that it would be wise to retain the services of these young men as full-time clinical teachers and to keep them for a few years with the hope of replacing them when the obligations of their medical practice no longer allowed them enough time to devote themselves completely to teaching.

This does not mean that clinical teaching must be solely by young and full-time teachers. On the contrary I believe that we must have a good number of more mature, half-time teachers who, being in the world of medical practice, will bring to their teaching a practical and humanitarian aspect—so that their private practice may enrich their teaching.

Unfortunately it often happens that these teachers, being highly qualified men, are more and more taken up with their private practice; the time they can give to teaching becomes insufficient, and this creates a problem in areas without a university hospital. But their share in teaching remains most valuable, because it comes from practical experience and brings to the student's eye the humanitarian, psychological and social sides of medicine.

The training of the student is related to his active participation in his own education, in the outpatient department, at the bedside, at staff conferences. This is an indisputable fact, and

*Dean of the Faculty of Medicine, Laval University, Quebec.

I agree with it. But his training also depends on the quality of the teachers and their teaching skill. Hence it is important to train the teachers well. All this brings me to say a few words on clinics in the amphitheatre. My opinion is that we have said too much good of it, and too much evil. There was a time when the clinic in the amphitheatre formed the principal part of teaching, and the amphitheatre became the stage which served to reveal professional competence and the teacher's gift as a speaker, rather than to dispense practical teaching to the studen. There is some kind of reaction from this, and I believe that we now have too great a tendency to discredit the clinic in the amphitheatre. I believe that in obeying the law of the pendulum, we are on the verge of exaggerating in the other direction. Even if it has the defect of repeating what has already been said in theoretical lectures, we must keep its place in teaching, firstly because essential things must be repeated often, and secondly because it trains the student confronted with a special case to view it as a whole, to give each thing the relative importance it carries in the whole of the clinical picture. Thirdly, it makes for better qualified bedside teachers, because those who have prepared a certain number of clinical lectures for the amphitheatre have at their disposal numerous well-catalogued problems that come back clearly to their mind when faced with a similar clinical case; this is an asset to their teaching.

We might add to this that through teaching in the amphitheatre the teacher acquires the habit of addressing the public and speaking clearly if not elegantly.

The medical specialties must be integrated in the general teaching of internal medicine, and even if these subjects are taught by specialists, it must be done in collaboration with internists, because all these problems are of a general order and cannot be judged merely in terms of the specialty. Moreover, although these specialties should be taught mostly in specialist clinics, now and then there should be teaching on hospitalized cases showing another aspect and secondarily presenting a problem related to one of these specialties. I am thinking mostly at this moment of the mental illnesses that the student must learn to track down and to direct towards specialist care before an accident occurs. This is also true of all neuroses and psychosomatic complexes that they bring.

To sum up, the teaching of internal medicine holds an important place in the training of the future doctor. This teaching must be more practical than theoretical, but one must beware of exaggeration in this direction. The teaching of basic sciences, and of the physiopathological aspects of medicine, may be entrusted to a staff of young teachers constantly replaced. We must not, however, forget the anatomo-clinical method, and the importance of utilizing the practical experience of more mature teachers.

The teaching must be constantly improved by appropriate training. The student must be able to see the greatest number of cases personally, and he must be trained to do his own investigation, diagnosis and treatment before resorting to laboratories or consultations, so as to obtain a working method which will profit him during the whole of his medical career.

THE ORIGINS OF SUPPORT FOR MEDICAL RESEARCH IN CANADA*

G. H. ETTINGER, M.D.†
Kingston, Ont.

THE DISCOVERY of insulin in 1921 surprised Canadians and their American neighbours into the realization that we had the potential to contribute to medical discovery, although we had little resources in equipment, supplies and technical assistance. The first notable effort to provide these came with the organization of the Banting Research Foundation, an invaluable support to the struggling young scientist. Generous American foundations began to take an interest in our medical schools; in the period 1920 to 1934 the Rockefeller Foundation gave to Canadian medical schools more than six million dollars. But the first serious national support followed the appointment of Sir Frederick Banting to the National Research Council in 1935. Banting told me that he had agreed to this appointment on the understanding that serious attention would be paid to his proposal to have the Council support research in medicine.

In 1936 General McNaughton, President of the National Research Council, after conversations with Sir Frederick and two or three other personal medical friends, submitted to the Canadian Medical Association and the Royal College of Physicians and Surgeons of Canada, draft proposals regarding the organization of medical research in Canada. These were studied by representatives of these bodies and of the Department of Pensions and National Health, who passed resolutions: (a) that the National Research Council set up an Associate Committee on Medical Research, and (b) that the National Research Council call a conference of representatives of interested bodies, viz. faculties

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†Dean, Faculty of Medicine, Queen's University, Kingston, Ont.

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of medicine, medical research institutions apart from medical schools, Dominion and Provincial Departments of Health, the Canadian Medical Association and the Royal College of Physicians and Surgeons of Canada.

It should be noted that the pressure for these proposals came firmly from organized medicine.

The conference was held in Ottawa in February 1938, and the Associate Committee on Medical Research created shortly after, under the chairmanship of Dr. Banting. Dr. J. B. Collip was appointed Vice-Chairman in September 1939, and succeeded to the chair on the death of Banting in February 1941.

In its first year the Committee had a budget of nearly $53,000, a good share of which was committed to a program of research in tuberculosis. It proposed to initiate research fellowships, but the Council would not commit funds for this, and the Committee had to be content with undertaking to support researches related to rheumatic disease, medical radiology, and a few fundamental investigations. These had hardly been started when we were at war, and the Committee devoted its energies and its resources to applied research related to the comfort, safety and health of the Armed Services, first through the setting up of subcommittees, and later, in the budding off of Associate Committees for Army, Naval and Air Force research.

In 1943, the government considered the passing of legislation directed at social security, and contemplated a large post-war program of national health insurance. The President of the Canadian Medical Association wrote to the President of the National Research Council, urging that he impress on the government the wisdom of including a large budget for medical research. This letter was referred to the Associate Committee on Medical Research, who in turn solicited and obtained permission to submit a memorandum to the Social Security Committee of the House of Commons. Representatives of the Associate Committee were heard on June 11, 1943. The memorandum, read by Dr. C. H. Best, commenced:

"The Associate Committee on Medical Research, of the National Research Council, wishes to lay before the Special Committee on Social Security of the House of Commons evidence that the National Research Council should be entrusted with the direction of any Medical Research programme which will spring from the application of a National Health Insurance Act."

There followed an account of the origin of the Associate Committee, its plans for peace-time research, its elaborate program of war-time research which engaged all the resources of the Canadian laboratories, and concluded:

"Such a programme has had two notable results. First, it has meant laying aside the fundamental problems, e.g. in physiology, biochemistry, pharmacology, and in the various fields of clinical research, which would normally engage the personnel of Canadian laboratories and clinics. These are problems which affect the health of Canadians. Their investigation must be postponed, not abandoned. They are still with us, and they must be explored when the war is over.

"Second, it has built up a large and capable medical research organization. The Associate Committee on Medical Research, and the other Associate Committees dealing with medical research in the Services, are integrated through the National Research Council. They are composed mainly of university teachers and research investigators whose services come to the National Research Council without cost. Their membership sometimes overlaps. Most of their work is done in medical laboratories in the universities, where the directors give their time without cost. A large body of young investigators is being built up into efficient units. Important discoveries have been made, some of such a secret nature as to be disclosed to a very few. Some of these discoveries have been so fundamental as to precipitate requests for sharing with the armed forces of our Allies. Through the National Research Council there is frank interchange of ideas with the Medical Research Council of Great Britain, and the National Research Council of Washington. In short, there has never in Canada been such a large and well-trained group of young medical research investigators, well knit together, with careful integration of their work. This organization should be made permanent.

"When the war is over, these, and other young people who will be added to them, will be trained and eager to investigate the nation's peace-time problems. They will have been brought to this state under the National Research Council. They will be available to the Associate Committee on Medical Research, who, as a central organization, will know the Canadian field, and will have had the experience of directing work with economy and productiveness. This Committee has had and will continue to have the advice and confidence of all the prominent Canadian medical research workers.

"The Associate Committee feels that at the conclusion of the war there will be an accumulation of medical problems of the civil population, which will be as urgent for them as are the medical problems of the Services today. A much larger amount of money will be needed for their investigation. They can be most economically and successfully attacked through the organization which has been built up by the National Research Council, and which has been functioning in these last five years with conspicuous success."

Three years later, while this legislation was still under consideration, Mr. Brooke Claxton, Minister of National Health and Welfare, said in the House of Commons:[1]

"The National Research Council has been established by Parliament as the principal agency of the federal government to carry on research. My predecessor and I have discussed with the council whether or not the function of the National Research Council should

extend to medical research. We have decided that medical research should be assisted through the National Research Council rather than through the Department of National Health and Welfare. We came to that conclusion because we felt that it was desirable that practically all support of research by the federal government should be co-ordinated through one institution. The National Research Council has done magnificent work in assisting medical research relating to the prosecution of the war, but to a very great degree its assistance to medical research in connection with diseases not associated with the war had to be suspended because of the shortage of doctors and technicians in Canada. The pressure on the available personnel in connection with the war really exhausted all their possibilities of rendering useful service in any other field. But that has now changed, and with the demobilization of men from the armed forces, together with the continued output from the medical schools, it is expected that the medical research division of the National Research Council will be called on to assist in a very much larger number of research projects of various kinds."

This sounds familiar to those who remember the brief submitted by the Associate Committee on Medical Research. Two years later, in May 1948, when Mr. Paul Martin was Minister of National Health and Welfare, the Prime Minister made a statement before Parliament in which he described the policy of the government with respect to health services and health insurance. It was proposed to make available health grants under the following categories: (1) General Public Health, (2) Tuberculosis Control, (3) Mental Health, (4) Venereal Disease Control, (5) Crippled Children's Grant, (6) Professional Training, (7) Control of Cancer, (8) Public Health Research. Under the last, $100,000 would be available the first year; this would be increased annually by $100,000 until $500,000 was reached. But Dr. B. D. B. Layton, Principal Medical Officer, Research and Development Section of the Department of National Health and Welfare, reports[2] that in the first year of this program the total grants made for medical research by that Department amounted to $207,000; that in the fifth year they were $1,455,000 (more than twice the amount disbursed by the National Research Council), and that in 1955-56 they were $1,785,000—more than one million dollars in excess of the National Research Council's $725,000. Clearly something had happened to the policy of the Government as expressed by Mr. Brooke Claxton.

Grantees praise the policy of the National Research Council in the administration of its grants-in-aid and fellowships; they complain about the cumbersome methods of the Department of National Health and Welfare. Why has the latter outstripped the National Research Council in its budget for medical research? I think that one reason is that the proper organizations did not emphasize their preference to the Government. It is probable that organized medicine (including the medical schools) should have approached the Government, and asked that the National Research Council be entrusted with the complete, or major, medical research program. This opportunity was available; it was not taken.

On April 6, 1943, a delegation from the Canadian Medical Association, the powerful organization which had urged the National Research Council to embark on medical research, presented a memorandum to the Social Security Committee of the House of Commons, embodying the view of the profession of medicine on the question of health insurance. The objects of the C.M.A. were recited; they included "(g) To conduct research work in connection with problems confronting the profession". The purposes of the submission were listed; they included "To emphasize that adequate medical care is essential to the welfare of Canada", and "To set forth features which should be included in any plan of health insurance". The words "medical research" were not used; the Government was not asked to set aside any money for this purpose; the great contribution of the National Research Council was never mentioned.

Not that Parliament would not have been sensitive to a recommendation, or the work of a lobby. It was already listening to strong views about the need of research in the field of cancer. In June of that same year two members of the House of Commons urged that something be done to assist Dr. J. R. Davidson of Winnipeg, who claimed to have a successful treatment for cancer. Pressure was put upon the Department of Pensions and National Health; the National Research Council was asked to investigate, and Dr. Davidson was invited to apply for a research grant. He declined to do so. The National Research Council arranged an experimental investigation of Dr. Davidson's methods at the University of Manitoba; his claims were not substantiated. Nevertheless, the question was raised again repeatedly in the House of Commons by several members, including Mr. Harry Leader, who claimed to be a patient of Dr. Davidson and to have received great benefit from his treatment. Mr. Leader was popular in the House; he was described by Mr. Mackenzie King as one who had given him much co-operation. Dr. Davidson's claims were investigated by the Government of Manitoba, whose Commission found that Dr. Davidson's cancer patients died "on schedule". Mr. Leader died of cancer in May 1946, and his death was recorded in the House by Mr. Mackenzie King who said, "It is not without significance that Mr. Leader's death occurred at a moment when there is under way a nation-wide campaign for the raising of funds to further cancer research. . . . In his passing the Parliament of Canada has lost one who, throughout his life, has faithfully served the public interest in the many fields of activity, and who, by his death, left a record of undaunted effort and heroic endurance."

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Eight months later Mr. Paul Martin, on becoming Minister of National Health and Welfare, called a conference in Ottawa of representatives of all organizations interested in education, research and treatment in the field of cancer, and the National Cancer Institute was established. The Trustees of the King George V Silver Jubilee Cancer Fund (including the Prime Minister, the Leader of the Opposition, the Minister of National Health and Welfare, and several Deputy Ministers) turned all but a fraction of that fund over to the National Cancer Institute for research purposes. Later the Provincial Governments were permitted by the Federal Government to give to the National Cancer Institute a percentage of the Cancer Control Grants available under the National Health Grants program. The voice of Harry Leader had touched the hearts of the Members of Parliament.

One more example of the effect of pressure on the House of Commons, leading to federal support of medical research outside the National Research Council, may be of interest. In 1946, a young woman in Vancouver, whose mother was crippled with arthritis, sent a circular widely over Canada which claimed that there were 600,000 Canadians suffering from rheumatism and arthritis and that no research in these diseases was being sponsored by the Government. It urged each recipient of the circular to write to his Member, asking that something be done. The Members were bombarded with letters from their constituents, the question was frequently raised in the House of Commons, and the Minister of National Health urged to take action. When, a few months later, Mr. Paul Martin succeeded Mr. Claxton, he announced that a conference would be called. This was held in October 1947, and out of it grew the Canadian Arthritis and Rheumatism Society. Significantly, the opinion expressed by rheumatologists at this conference was that much more knowledge was available than was used, and that adequate facilities for treatment were required rather than research. Nevertheless the Society embarked on a modest research program; the funds obtained by public subscription are inadequate for this purpose and the Department of National Health and Welfare makes grants to applicants recommended by the Society.

Shortly after the war was over, the Department of National Defence set up the Defence Research Board, which supports extra-mural research in medicine, and the Department of Veterans Affairs offered to support research in its own installations. These, with the organizations I have already described, are the chief federal sources of funds for research in medicine. Dr. Layton estimates that their total contributions in 1955-56 were $3,285,000; there is doubtless some increase since. His report indicates that an additional $2,250,000 was available from other sources for extra-mural research in Canada in that year.

There is great unrest in the medical research laboratories of universities because it is believed that this total sum ($5,535,000) is inadequate, and that the multiplicity of sources makes administration awkward and continuity uncertain. Many believe that the Government of Canada should make much more money available through the agency whose grants are the easiest to administer. My thesis is this—the Government will respond to pressure from the proper, authoritative and important organization; and organized medicine, including the medical schools, must ask if it wishes to receive.

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TEACHING WITH PRIVATE PATIENTS IN MEDICAL SCHOOLS

IRWIN M. HILLIARD, M.D., F.R.C.P.[C.],*
Saskatoon, Sask.

IT IS OBVIOUS that there is a changing pattern of hospital care in Canada. In Saskatchewan a hospitalization scheme has been in effect since 1946. The medical school, which expanded its course to four years in 1954, has been carrying out bedside clinical teaching during the last three years in hospitals where there are no charity or public ward patients. A progress report on our teaching program may be of interest to teachers in other centres.

Visitors to our school have remarked on the ease with which a satisfactory teaching program has been developed with private patients only. It has been suggested that part of our success is due to the fact that a large percentage of our patients, being from the country, are somewhat less sophisticated and hence more willing to co-operate in the teaching project. However, we have found no real difference between urban and rural patients in their willingness to co-operate, regardless of intelligence or economic or cultural background. But it is true that Saskatchewan people are more health-conscious, that this is a "grass roots" university of which they are all proud, that they feel the new medical school is, in a very real sense, theirs.

Although many believe that surgery can be done on the kitchen table and the brightest minds may work brilliantly in the darkest studies, nevertheless

*Professor of Medicine, University of Saskatchewan.

it is a decided advantage if the teaching hospital is particularly noteworthy from the standpoint of beauty, cleanliness, equipment and cuisine. A long waiting list in the admitting office is also essential. The new University Hospital in Saskatoon fulfils these criteria to a very satisfactory degree. The construction of the hospital is such that the wing with its solarium is the unit, instead of a large private room. The largest ward has eight beds, the space being divided by partitions three-quarters the height of the room into cubicles. This is the basic accommodation provided by the provincial hospitalization plan. If a patient is very ill, he is assigned a single room. Very few of the attending physicians stop to think why the patient is in a single room—because of the seriousness of his disease, because he has requested it, or because it was the only bed available when he was admitted. All patients when admitted indicate their willingness to take part in the teaching program by signing a form (shown in the adjoining column).

UNIVERSITY HOSPITAL, SASKATOON

CONSENT FOR TREATMENT

I, the undersigned, consent to undergo all necessary treatments, tests and other procedures required in the course of the study, diagnosis and treatment of my illness by the medical-teaching staff and other persons of the University Hospital and College of Medicine. I understand that this is a teaching hospital, that training doctors and nurses is one of the activities of this hospital, and I agree to co-operate to the best of my ability.

..... 19 .....
(Date) *Signature of Patient*

(To be signed by the legal representative in the case of a minor or of a patient who is not competent mentally, otherwise by the patient.)

Read over and explained to the signatory who stated that he/she understood same and offered his/her signature in my presence.

Witness .....

Many patients live great distances from the nearest doctor and must be kept in hospital a little longer than if they lived in Saskatoon. These patients make use of the solaria, where there is a friendly communal spirit. Single rooms are less obviously segregated from the corridors unless the patients are seriously ill or in isolation.

In considering the undergraduate teaching, we might start with that of the second year, which is probably the most difficult. There are three main types of teaching: the lecture demonstration, the conference, and the bedside clinic. There is no problem in obtaining patients' co-operation for lecture demonstrations. The attending physician or his assistant resident will be careful to explain to the patient the need for the lecture and the part he will play in the presentation of his interesting and particular disease to the students. All patients know they have the privilege of refusing, but they also know it is something all the other patients are participating in, with the result that they feel it is an honour rather than an indignity to co-operate. It is a responsibility which cannot be evaded by the paying of a higher daily rate. Occasionally a patient has seemed nervous or a little ill at ease before the students. When asked about it, the patient has usually replied, "I was afraid I might not be giving the right answers." This concern that the lecture might be a failure reflects the interest the patients have in the teaching and explains why some of them are willing to endure considerable discomfort and even embarrassment. It should be pointed out that patients are never whisked away to a lecture without consultation. Their meals are arranged ahead of time or kept warm until after the lecture. Adjacent to the lecture theatres are comfortable and private waiting rooms with a pleasant nurse in attendance. The staff is responsible for seeing that the patient arrives just in time and is not kept waiting. These little courtesies tend to be neglected unless continually emphasized. It is rule that when a patient is being interviewed in a conference or small discussion group, the attending physician is present. He introduces the patient to the group, many of whom the patient has already met. If it is impossible for the patient's doctor to be present, the doctor guiding the conference meets the patient ahead of time to explain the nature and purpose of the conference.

Even in the difficult second year, when students are learning techniques on patients, bedside clinics have been possible by limiting the number of students to four or five, each having his own patient. Students first practise techniques on one another so that they are not completely unfamiliar with the method when they start examining a patient. Combining history taking and physical examination in each region at the same time, the student has a chance to talk to the patient and get to know him before starting to examine him. This not only gives the student more confidence but puts the patient at his ease. The patient feels that the student may, by careful questioning, be able to add something to the information already taken by the more senior student or intern. For most patients who are not sick, the odd hour spent with an interesting student offers some relief from boredom. Certainly when the student is having his final examination the patient does everything he can to help the student—even to giving him the diagnosis!

The patient who tends to get abused is the one who has a particularly interesting murmur or an area of bronchial breathing or an easily palpable spleen at a time when these particular findings are of special interest to the students. When we started to use private patients for teaching, the attending physician would be contacted first and the patient consulted before a student was brought in. However, co-operation has been taken so much for

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granted that this is sometimes neglected and it has been necessary to make sure that each clinician or student checks with the assistant resident before seeing a patient who is not his own, in case the patient has just been the subject of a clinic.

Some of us can remember being turned loose on patients before we knew how to question them or even to observe intelligently. It is an important principle that no student should interview a patient until he has had some experience in interviewing normal, healthy people. He should never examine a patient until he has examined his fellow-student. He must realize that whatever he does has to be for the patient's good as well as his own training. If he fails to observe that the patient is tired, he must quickly withdraw if the patient suggests it. This makes a student's attitude towards the patient possibly a little different than it might be towards one who had no alternative but to put up with him. The student learns to treat the patient with the same consideration he will give his first patient in practice, and this is valuable. The greatest hazard is probably that the *teacher* may feel that the examination is going to be difficult or embarrassing for the patient. It is important that the teacher has enough patients for his own group of students. The teacher must realize that his patient is gaining from being in a teaching hospital where the presence of students ensures careful investigation, clear-cut thinking and more ideal treatment. If a teacher feels he must apologize for having the students around, the patients tend to agree with him.

Third-year teaching, being an extension of second-year activities, is easier. Lectures and conferences run more smoothly. Time spent in the bedside clinics is shortened by the use of teaching rooms. Each student has his own case to work up; he becomes the patient's own doctor and assistant to the attending physician. The student presents his case to the other three students in his clinic, demonstrating the physical findings before they retire to the clinic room to discuss treatment. This shortens the time spent at the bedside, and I think it is an advantage to those students who tend to become faint when they have been standing for more than an hour. Discussion can be freer when away from the patient.

One of the difficulties can be the initial approach of the third-year student. If two interns and a fourth-year student have already taken a history on the patient, the third-year student is decidedly at a disadvantage. There must be enough patients in the teaching unit so that this kind of duplication can be avoided and turnover of patients fast enough that a patient sees only one student instead of several in rotation.

Fourth-year students in medicine spend half their time as interns working up cases and doing the duties of interns on the ward, and a little less than half seeing out-patients. When on the wards, they do not work at the same rate or under the same pressure as the rotating interns, but their work is not duplicated by the intern, and for all practical purposes they are the patient's intern. Their work is carefully supervised by the assistant resident. The out-patients whom the fourth-year students see are those referred to fourth-year teachers. They see the patients first, taking a careful history and doing a complete physical examination, all of which is checked by their teacher who has responsibility for only one fourth-year student. Together they discuss the problem with the patient, and only under rare circumstances is it necessary for the student to be excused because of any particularly intimate problem. The students often get a more detailed history than does the consultant himself, but it has to be carefully evaluated. Teachers find it difficult to teach, to take responsibility for the case and to prepare the consultation letter, all at the same time. Some of the cases seen by the fourth-year students are follow-up cases with certain chronic illnesses; some D.V.A. cases which provide a longitudinal view of disease; and some cases referred to the Cancer Clinic which are treated in a way comparable to clinic experience.

Graduate and postgraduate training is an essential part of the undergraduate training program. Attending physicians teaching third-year and fourth-year students cannot be in the department at all times and therefore instruction is provided by senior interns and residents. Consequently, for the best undergraduate teaching, a school or hospital needs a good resident training program. Most of us can remember having a short period as junior intern on the private wards and generally we felt it was wasted. We also felt that, on the whole, the private patients did not get as good care and supervision as those in the public wards with whom we had more to do. Sometimes the daily supervision of the attending staff for the private patients seemed to be more social than medical, although presumably social visits had some therapeutic value. Our aim is to give private patients the best care.

Several problems arise when we are endeavouring to carry on an extensive resident training program as well as training junior interns and teaching fourth-year students.

The first and most obvious is the competition between the fourth-year student and the junior rotating intern. As junior interns most of us felt that on some occasions on certain services we were so busy with history taking and physical examinations that we could not study our cases adequately or follow them up in any detail. The use of fourth-year students in working up some of the cases takes pressure off the junior interns and allows them to do better work. They do not require the same detailed supervision by the assistant resident in the area as the fourth-year students. Also they can deal directly with the attending physician in the initial

presentation of the case and the outline of the investigation and proposed therapy. Where the junior intern works very closely with the attending physician, he is accepted as part of the team and can carry out the routine procedures such as thoracentesis, lumbar puncture, biopsy, and removal of stitches, to the satisfaction of the patient, as he would on a public ward. Frequently a patient is as profuse in his thanks to the junior intern as to the attending staff, recognizing how each has fulfilled a very important and yet very different function in his care and final cure. Occasionally, an enthusiastic or immature junior intern will cause the patient concern or even arouse a passing irritation. If this is quickly spotted by the assistant resident, little harm is done. Training junior interns while caring for private patients is not a problem as long as there are enough patients so that the junior interns are not duplicating the work of fourth-year students.

A more serious problem is the training of residents and assistant residents, for they must be taught to take responsibility as well as to make decisions on purely theoretical grounds. However, one must remember that these physicians are already fairly well trained. They are probably better able to look after patients than are many physicians in practice. They do not have the multitude of distractions and should not have the same pressure of work that success forces on many practising physicians. It is obvious that the amount of responsibility turned over to residents or assistant residents will be quite different in the months of July and August, from May and June. From the point of view of safety to the patient, the program can be arranged so that there is also complete coverage from the standpoint of the resident's training. Teachers all run the danger of trying to make their trainees like themselves, rather than aiming to develop in them independent, critical judgment.

The patient must see the teacher and his resident together frequently. He must be aware of the complete confidence that the teacher has in his resident and know that for all practical purposes, the resident and his physician are one. If the attending physician is trained to build up his resident, things go very smoothly. When a new medicine gives dramatic relief, a physician may take credit for it even though it was the suggestion of the resident. If the patient realizes that this particular help came from the resident, he is grateful not only to him for the suggestion but to the attending physician for having acquired such an able assistant.

The question comes up "What if some harm comes to the patient?" because of error in judgment or carelessness on the part of the resident. This is very unlikely to happen if the resident is not too busy and if team work has developed to the point of almost complete integration. For those of us whose offices are in the hospital, the danger is that the resident may have too much supervision. We try to overcome this by having the resident see consultations in other departments ahead of time, outlining investigation and suggesting more immediate treatment. When he has already committed himself, differences of opinion become obvious and discussion of considerable value.

It is felt by many that the final act in postgraduate training is to turn over the ultimate responsibility to the resident, whether in medicine or surgery. From his mistakes he will learn and gradually develop to maturity. The question may be asked, "If a resident suggests a form of therapy with which one does not agree, what attitude is in the best interests of his training?" Although this seems like a very important issue, the problem does not arise frequently, for during the early part of his training the resident should not be put in the position of being allowed to make the wrong decision. By the end of his training his judgment may be as good as his chief's or better. When one is responsible for the care of the patient, whether public ward or private, one has to make the final decision if there is a difference of opinion. Since the attending physician works closely with the resident, the final decision is often as much the resident's, and the patient benefits by the close association of the attending physician and the resident, who are learners together.

THE IMPORTANCE OF AN OUTPATIENT DEPARTMENT IN A TEACHING HOSPITAL*

L. G. BELL, M.D.,†
Winnipeg, Man.

ONE OF THE MOST important functions of a general hospital is to provide ambulant care for the needy. This vital service is carried on in the outpatient department, which is supplemented by a social service department to assist in the after-care and disposal of patients, and in a study of home environment. The outpatient department not only provides diagnostic and treatment services for ambulant patients, but also carries out the follow-up study and treatment of patients after discharge from the public wards. The establishment of special clinics for certain types of illness, such as diabetes or arthritis, enables the medical staff to make valuable studies of chronic diseases, and to offer

*Based on a document prepared for the information of the Provincial Department of Health and Public Welfare.
†Dean, Faculty of Medicine, University of Manitoba.

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the most highly specialized care for such conditions, on an ambulant basis.

One of the greatest problems encountered in caring for the increasing number of patients suffering from chronic diseases is to keep them from occupying active treatment beds for long periods of time. This type of hospitalization imposes a tremendous financial load on governments and municipalities, and the problem is likely to be accentuated by the inauguration of National Hospital Insurance plans. Actually, most long-term illnesses can be treated on an ambulant basis in a well-organized outpatient department, especially if a home-care plan is evolved to supplement clinic facilities. Compared to the existing *per diem* rates for public ward beds, the cost of outpatient care is relatively small, so that enormous savings to governments and municipalities can be effected by outpatient care of the chronically ill. It is also important from a rehabilitation standpoint that patients with chronic illness should be maintained as ambulant cases as long as possible, because of the tendency for such patients to "settle in" and become prematurely bed-ridden, and because of such added hazards as pneumonia and thrombophlebitis, which constantly threaten elderly people who are kept in bed for long periods of time. For example, many patients suffering from arteriosclerotic heart disease can be treated in an outpatient clinic and prevented from developing congestive heart failure, which might necessitate a long period of hospitalization. Diabetic patients are best treated on an ambulant basis, so that regular check-ups can be made and many complications prevented. Similarly, the large group of patients with rheumatic diseases can be kept ambulant for many years by regular treatment, including physiotherapy. It is most important, both economically and from the standpoint of good treatment, that this large population of the chronically ill in the community should have free access to outpatient clinics, and that the financial barriers should not be such as to prevent them taking advantage of the well-organized facilities for ambulant care that exist in most teaching hospitals.

For the above reasons it is obvious that the outpatient departments of teaching hospitals are making a major contribution to health care in the community, and that this care is offered at low cost, and hence effects tremendous savings to provincial and civic governments, and to municipalities, by preventing unnecessary hospitalization.

The modern trend in clinical teaching places more and more emphasis on the study of ambulant patients, rather than on those confined to hospital beds. This trend is due to the following reasons:

1. The in-patient population of the public wards has come to consist largely of patients with chronic degenerative diseases—an important but limited aspect of disease in the community.

2. Generally speaking, the patients occupying public ward beds, apart from those with acute conditions, represent the later stages of disease, whereas sound clinical teaching places great emphasis on the detection of disease in its incipient stages. This can only be studied in a centre where ambulant patients are seen, and where the patient population presents an accurate cross-section of illness in the community. The future advances in clinical teaching will evolve around the ambulant patient, bringing into sharper focus the patient's place in society, the significance of environmental and emotional factors in illness, and the preventive aspects of each case.

In the outpatient department the conditions under which patients are seen, investigated and treated should reproduce as closely as possible the conditions of a practising physician's office. The laboratory and x-ray facilities are close at hand, if required, and the opinions of specialists are readily available. In this setting, the student interviews patients who present themselves for medical advice, and under expert guidance he attempts to arrive at the correct diagnosis and prescribe the appropriate treatment. Here the student is given an opportunity to follow the course of the patient's illness and the results of treatment. With the assistance of the social service department, the student frequently follows the patient into his home, just as a general practitioner would, and thus makes valuable observations on the social and environmental factors in the patient's illness. A greater amount of time in the curriculum of most medical schools is being allocated to this type of supervised case study in which the student is able to apply what he has learned in the more didactic aspects of the medical course. In keeping with this important trend in clinical teaching, many of the senior members of clinical departments are devoting much of their time to the outpatient clinics of teaching hospitals.

Clinics are staffed by skilled and experienced physicians and surgeons who also hold appointments on the teaching staff of a medical school. These clinical teachers are responsible for the exemplary care of outpatients, without remuneration, and are entrusted with the training of medical students and residents, in an atmosphere which reproduces the highest calibre of medical practice.

The teaching units of a hospital contribute to the advancement of medical knowledge by providing leadership in the diagnosis and treatment of disease. The outpatient departments of teaching hospitals render invaluable health service to the community at low cost, and are indispensable to the training of medical students and nurses, as well as of young graduates taking training in the specialties. Obviously, it is of the utmost importance that outpatient clinics in teaching hospitals be maintained in an active state. The impending plans for National Hospital Insurance have caused medical educators to wonder what effect such plans will have on the maintenance of adequate teaching units in hospitals affiliated with medical schools.

The Association of Canadian Medical Colleges, comprising the deans and other administrative officers of the twelve Canadian medical schools, expressed its concern in a brief presented to the Honourable the Minister of Health and Welfare on November 12, 1957. One of the recommendations contained in this brief was as follows:

"That a complete outpatient service offering diagnostic and treatment services be provided in university teaching hospitals. Good facilities now exist in some schools, and it is essential that nothing be introduced in the new legislation and regulations which would reduce the number of patients seeking advice, or the quality of services provided at these clinics, or interfere with the hospitals' ability to finance such services. Indeed, it is of vital importance to medical education that regulations be framed in such a way that it will be possible to bring the outpatient services of all teaching hospitals up to the required standard."

The reasons for maintaining strong outpatient departments in teaching hospitals may be summarized as follows:

1. The outpatient department provides the highest standard of ambulant care for the needy in a community.

2. Outpatient care avoids unnecessary hospitalization, and provides ambulant diagnostic and treatment services at a relatively low cost.

3. The outpatient clinic provides clinical teaching cases for students, interns and residents, under conditions which closely approximate general practice.

4. In the outpatient department, disease processes are seen at an earlier stage than those encountered in hospital patients, and hence treatment of such conditions can be more effective.

5. The large number of patients attending outpatient clinics allows for the grouping of patients with specific diseases for purposes of more effective treatment, for teaching, and for clinical investigation.

6. The increasing emphasis in the medical curriculum that is being placed on clinical instruction in the outpatient departments, and the development of home care services to augment such teaching, indicates very emphatically the importance that this form of instruction has come to assume in the minds of medical educators.

THE FINANCING OF OUTPATIENT DEPARTMENTS

It is desirable from the standpoint of community health that outpatient departments provide the best possible medical care to those patients who are unable to obtain medical services from private resources. In order to meet this aim, outpatient departments must be adequately financed. There are obviously a number of sources of revenue which may contribute to the cost of an outpatient department in a teaching hospital. These include:

1. The charges paid by the patient.

2. Charges paid by the government or municipality for those patients who are unable to pay.

3. Some portion of the annual teaching grant made by the government through the university to the teaching hospitals.

4. Grants from voluntary organizations.

5. Absorption by the hospital of additional costs of outpatient department operation.

Generally speaking, the patient population of an outpatient department may be divided into two groups:

1. Patients with long-term chronic illness, who are usually receiving welfare assistance because of the cost of their illness. These are usually elderly patients, and are truly indigent.

2. Patients with short-term and acute illnesses, who are unable to pay for private medical care. These are usually young patients, many of whom are working. Their earnings, however, are just enough to take care of ordinary needs. The extra cost of illness, especially in the wage-earners, is beyond their means unless they place themselves in welfare hands.

It is obvious that the increasing cost of outpatient care does not affect the first group of patients, who, generally speaking, cannot and do not pay their own bills. However, the second group is placed in real difficulties. All too often the young wage-earner who comes to the outpatient department and is presented with the charges, finds that he cannot pay them. He must then either stop attending the outpatient department or place himself in welfare hands to meet the costs. In the first case, his disease is neglected when in an early and therefore amenable stage, and, in the second case, welfare costs to the community are increased. Since adequate care for this group of patients has always been an important function of the outpatient department, these effects are most undesirable.

A similar difficulty is encountered in the prenatal clinics. Here, pregnant women are given periodic examinations until delivery in order to detect and correct any complication or intercurrent disease which may arise during pregnancy. These young women usually feel quite well, even when definite signs of complications can be detected during a periodic check-up, so that it is necessary for the obstetrician to emphasize to them the preventive nature of the prenatal examination, and to urge them to attend the clinic at specified times. However, when anything more than a nominal charge is made to these patients for their prenatal visits, they frequently do not return to the clinic, and may only present themselves after they have gone into labour, or when they have developed severe complications which might have been prevented. Prenatal clinics have been an important factor in the reduction of maternal morbidity and mortality. They are essentially preventive services, and should be readily available to

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every pregnant woman without regard to her financial status.

The medical faculty of the university has a very real interest in this situation, since much of the clinical teaching is done in relation to the patients seen in the outpatient departments of teaching hospitals. As pointed out earlier, it is vital to the teaching program that students should be taught medicine in a manner closely resembling that practised in the community at large. If the patient population does not include an adequate number of young patients, the teaching becomes unduly weighted with elderly patients with chronic disease, and is no longer offering a cross-section of illness in the community. This presents an impossible handicap to clinical teachers striving to turn out students well equipped to deal with the ordinary problems in medical practice.

If a nominal charge for outpatients' visits were made, with the remaining costs coming from government grants, the undesirable effects mentioned above would be very much reduced. At the present time, government pays most of the cost in the elderly, chronically ill group, and the suggested method of financing would not increase their contribution very much. Since the younger patient group is not very large, the increased cost under such a plan would not be as large as might be expected.

In view of the tremendous importance of outpatient departments in community health centres where the best possible standards of diagnostic and treatment services are provided for the needy, it would seem reasonable that the major cost of maintaining these units should be borne by provincial and civic governments, and by municipalities. The voluntary organizations should also make a liberal contribution. The hospitals which maintain active outpatient services should not be burdened with excessive costs. Because the outpatient department has become one of the most vital units in a teaching hospital, the government should make special grants to ensure that these departments continue to function untrammelled by need, and able to accept patients who can make only a token payment for medical services.

MEDICAL EDUCATION IN CANADA

R. R. STRUTHERS, M.D., *Toronto*

WITH THE RENEWED and increasing political agitation for increased governmental activity in the field of medical care—resulting from the publication of some of the terms of Bill 320, The House of Commons of Canada—"Hospital Insurance and Diagnostic Services Act", there are some pertinent aspects of medical education which should be drawn to the attention of all Canadians and particularly those of the medical profession.

The medical education institutions of Canada—now 12 in number—have continued to produce qualified medical manpower, relatively adequate in terms of both quantity and quality, in spite of the remarkable growth of our country during the past 40 years. Coincident with a population increase from 7± to 15± millions between 1911 and 1954, civilian physicians have also increased from 8700 to 15,600. The annual graduates of 1921—from 8 schools—numbered about 350, and in 1955 from 12 schools, almost 900, increasing to 930 by 1957 (United States of America in 1955—81 schools—6977 graduates), without completely utilizing the facilities for expansion provided in the newer regional schools; and in spite of the fact that almost 25% of the annual graduating class eventually practise in the United States, we have a stable population-physician ratio.

The average expectation of life for men of 27 years of age, the age at which a medical student has usually completed his first-year internship and is presumably prepared for practice, is about 35 years. On this expectation of life it may be assumed that the present number of 16,000 Canadian physicians will require replacement at about 3% per annum or a number of approximately 500, to repair losses due to death and retirement. However, our Canadian schools now graduate almost 1000 per year, and in spite of the numbers of those who return to or emigrate to the United States, we are graduating about 250 doctors per year more than our ascertainable needs for present conditions of practice; this in addition to the numbers of doctors who are immigrating to Canada from the United Kingdom and Ireland and Continental Europe. Contrary to the statements of the Ministry of Health and Welfare, and to the propaganda for more doctors to become available to provide medical care in Canada, it would appear that our needs are being adequately met, and that it is time to call a halt to the expansion of medical schools, both as regards their numbers and the size of classes admitted thereto. Medical schools have a responsibility both to the nation and to the student, to provide some assurance that the effort and support being given to medical schools for the training of future physicians is not a fruitless procedure. Judging from the level of ethical conduct in some European countries suffering from excessive numbers of medical schools and medical students and practising physicians, there is probably nothing

more destructive to high standards of medical conduct than cut-throat competition for patients and economic sufficiency, resulting from an overabundance of physicians.

In numbers, our Canadian schools appear to be adequately meeting the demands for civilian physicians to provide medical care and to maintain present physician-population ratios: in the quality of preparation for their responsibilities our graduates, judging from results of United States National Board and other examinations, appear to be somewhat better than average. However, such results appear to be due to the sacrifice of considerable teaching manpower by overworking a numerically inadequate and underpaid staff of teachers who sacrifice both themselves and their families and their family life to the service of the medical schools. If our legislators, on behalf of the public, decide on a system of "complete" health insurance as in the United Kingdom, possibly the demands of an insured population will require a higher physician-population ratio, particularly in areas of economic difficulty. Similarly any attempt to cover the undefinable "unmet medical needs" of the population would also require more physicians, to a number as great as the fancied need can employ.

It is disturbing that in the agitation which is ardently pursued by some, not only that more physicians are needed for the community, but also that medical care should be provided by governmental authority with the taxpayers' money, the point unfortunately is almost always omitted that medical care, provided by tax money under any scheme governmentally subsidized, must include the cost of medical education; that is, the support of students and doctors-in-training must form part and parcel of the financial obligation assumed by the taxpayer if he determines that some form of "socialized medicine", either partial or complete, is what he desires. The elucidation and control of the problems of medical care, from the point of view of some of those who provide the education of future physicians, does not require more doctors so much as more efficient doctors through more adequate education and training, and the provision of better opportunities for them to do the *better quality of work* for which they are educated and trained by our medical schools. Fewer graduates—better trained—with better facilities for work, particularly hospitals in rural areas, can provide better and more medical care than now obtains in Canada. The education of the public towards the provision of such facilities is appropriately the function of our medical and political leaders rather than of medical faculties *per se*, whose primary interest is properly in teaching and research.

If, as is confidently forecast, Canada is likely to achieve a population of 21 millions by 1965, physicians in the number of some 21,000 will be needed to keep the physician-population ratio at its present level. During this period approximately 10,000 new doctors will probably be graduated from Canadian schools, of whom some 800 each year will remain in Canada to practise; and some 3% of practising doctors will be lost annually by death and retirement, or 500 per year, a net gain of 300 per year, or 3000 in the ten-year period. During the period 1951 to 1954, some 700 foreign-born physicians were immigrants to Canada. If, as seems likely, two hundred or more foreign physicians will each year immigrate to Canada, this will add another 2,000 doctors to the rolls; a total of

	16,000 now—
less attrition of 3% per annum for 10 years..	5,000
remaining in 1965	11,000
plus 800 per annum for 10 years at present level of graduates	8,000
plus 200 per annum immigrants.....	2,000
doctors by 1965	21,000

It is a tenable thesis that the 12 medical schools in Canada, for the present and for the foreseeable future, are training a larger number of doctors than the economy of the country can utilize or support; statements to the effect that many young people who desire to study medicine cannot gain entrance to a medical school, or that some sections of our country have a shortage of medical services, do not affect the facts of numbers of physicians, or their inability to gain a livelihood under present methods of payment in sparsely settled areas or areas of economic poverty.

From the above it seems valid that additional medical schools are not needed in Canada. If plans for expansion of recently established schools are to be implemented, the older schools would well consider that the postwar crisis in medical care in relation to the production of physicians was passed some years ago, and that the number of entering students should be restricted to that for which the physical facilities are available, as well as staff and salaries commensurate with a sound medical education in an academic atmosphere. Since medical education in the clinical disciplines depends on contact with and study of an adequate number of patients in hospital beds and out-patient departments of the teaching hospitals, and since suitable patients are diminishing in number through more widespread use of hospital insurance on a private basis, some schools are less advantageously situated for clinical teaching than 25 years ago, and could with profit reduce the size of entering medical classes.

At the present time Canada has an oversupply of medical schools and there is no doubt that several of them are hard-pressed to recruit adequate numbers of adequately prepared students to fill their classes; secondly, our present national population does not adequately support 12 schools in terms of money for salaries of teachers and equipment and patient contact.

In comparison with the situation in the United States, Canada has 12 schools for 16 millions and the United States 86 schools for 180 millions.

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Canada graduates about 950 physicians per year and the United States about 7000. Canada has about 4000 students in medical schools and the United States about 32,000; if the proportion were the same in relation to population, the United States would have some 45,000 medical students. Canada is at present overendowed with medical schools and medical students. For these reasons *selection* of students must be more rigorous. The question of professional freedom and liberty is the one at issue; government employment on the government's terms is an attractive bait where there are more physicians trained and available than can be economically supported by the population. Physician-population ratios in Canada vary from 1 to 2500 in areas of Newfoundland to 1 to 750 in Vancouver, obviously a problem of distribution economic in origin and soluble by altering the economic circumstances, not as in the United Kingdom by direction, by telling the physician where he may *not* practise under the National Health Service, but by offering the better amenities for practice and for living as a professional person. Where such amenities are provided by the local situation, little difficulty is encountered in attracting competent medical men to provide medical services to the community. The practice of medicine remains a community service provided by a highly motivated professional group—in Canada, well trained and competent. The problem of their distribution is essentially economic, requiring not more medical schools, more students and more doctors, but the opportunity to serve freely and more efficiently, and *not* under the bureaucracy which must result from governmental direction and control.

25 Whitehall Road.

HOW TO STUDY MORE EFFECTIVELY

ARTHUR W. HAM, M.B.,* *Toronto*

THIS ARTICLE is not addressed to the brilliant student and it would be a waste of time for him to read it. I think particularly of one such student to whom I once gave a lift for fifty miles or so. This young man was taking a difficult science course which he passed with honours each year, and he regularly won scholarships. But this was not all, for as we drove along I became aware that he was also exceedingly well-informed on literature, music, the theatre and almost everything else that could be suggested for conversation. He was pleasant, friendly and unselfconscious, neither unduly extraverted nor introverted and, so far as I could tell, perfectly adjusted within himself and to his environment. I was never so tired in my life as when I delivered him at his destination; trying to keep up my end of the conversation had worn me out.

At first thought it might seem that individuals such as the one described above should be the ones to write articles on how to study effectively. But many brilliant students never have serious problems in learning with which they must cope and hence they find it difficult to understand the problems of others. Those who have had problems, and have overcome them, are more likely to understand and be helpful. I should like to illustrate this point with a quotation because it is usual for quotations to be generously spread throughout articles that deal with learning. The only one I can think of that is apropos, however, is "Set a thief to catch a thief". Perhaps an analogy will help to further elucidate this point. A patient who visits his physician, complaining of certain symptoms with good reason, is relieved and comforted if he finds that the physician has had the same disease himself and made a recovery from it. He knows that under these circumstances the physician has an intimate understanding of his condition, and that when he asks if it hurts "here" in a special way, he knows what he is talking about because he has experienced the same hurt. The physician, moreover, has intimate knowledge as to how helpful any prescribed remedy is apt to be. Accordingly, since I was not as good a student as I might have been before graduation, and since I made some recovery afterward, I was perhaps in a favoured position to understand some of the problems of learning that impeded the medical students that I taught over the years, and to have some idea as to what kinds of advice might be helpful to them.

With this modest account of my qualifications we shall proceed to the business at hand. The first problem to consider is motivation.

Those who are not natural sceptics, or have not become so from studying psychology, are generally superficial in assigning reasons for their own and others' behaviour. For example, most of us are inclined to assume that those who run for public office do so from the strong sense of duty that they feel toward their fellow man, and that those who crusade for more comprehensive bathing suits cannot be as interested as most men in what they do or do not cover. And in the same superficial or perhaps generous way we usually assume that students study in order to learn. Why else would they attend lectures, laboratories, clinics and so on,

*Division of Biological Research, Ontario Cancer Institute, 500 Sherbourne St., Toronto 5.

from nine to five every day and then spend a few hours with their books in the evening?

Before trying to answer this question let us imagine what would happen if this assumption were true. What would happen if all the students in any university embarked on careers of determinedly and effectively pursuing knowledge from morning until night? There would be a cataclysmic re-organization of our colleges and universities within a year. Most of us who teach would find that we had pretty well shot our bolts before the school year was half over and we would not be able to get in to the libraries at night to learn more because they would be packed with students. Examinations would become a mere formality. However, this desirable state of affairs is unlikely to be realized, even if the moon becomes obscured by Russian satellites and our universities blanketed with appropriations for scientific education. So, we shall discuss this no further except to say that if any student is motivated by an insatiable determination to learn more and more he can scarcely escape being an effective student.

To discuss the motivation of most students we must discuss means and ends. The end, for a good student, is to learn more and more. The end for other students is to pass their examinations and finally graduate. The means that they adopt to attain this end is to conform to a pattern of behaviour that experience has shown leads to this end; this pattern involves attending most lectures, laboratories and clinics, and "studying" for a while, most evenings. Now, of course, in conforming to this pattern students learn something, some of them a good deal. But there is a profound difference between them and excellent students in that an excellent student, when he studies, has a guilty conscience if he does not learn something; whereas, other students have a guilty conscience if they do not conform to the pattern. To illustrate, there are some students who are out late every night, either because they have taken on night work to help finance their studies, or for other reasons, and who come to nine o'clock lectures and regularly fall asleep. Why do they bother coming? The reason is that in having to decide between sleeping at home with a guilty conscience, or sleeping at the lecture with a clear conscience, they choose the latter.

The fact that most students attend lectures has repercussions on their lecturers. Having a good attendance, teachers may assume that their students must learn a good deal from them, or else they would not attend. Accordingly, any lecturer who does not come into close contact with students in laboratory classes, or in other ways, can very well live in a pleasant dream-world about the effectiveness of his teaching. Perhaps the easiest and cheapest way to improve university teaching about one hundred per cent would be to make it compulsory for every lecturer to spend a good deal of time with his students immediately after each lecture to find out what they did, and did not, learn from it. This practice, if it were adopted, would, aside from making the students pay more attention at lectures, have two very important effects.

First, it would lead to the teachers' eventually giving lectures of such a character that students could not but help learn something from them.

Secondly, learning something from lectures, though it would come as a surprise to many students, would be so stimulating that if it happened several times in succession, they might become thoroughly aware of the pleasures of learning and so become good students.

However, this article is written for students and not for teachers, and there is no easy way for students to inform any lecturer that he is giving the wrong kind of lectures for them to learn much, unless, for example, they were to slip a copy of an article such as this under his door some time with appropriate passages heavily scored. So we shall go on to our discussion of the student and try to ascertain why so many, on beginning university, only go through the motions of being students without being interested in learning.

This problem, of course, is one of the most important in our present-day society and it would take a good deal of research to establish the answers. Here, we shall venture only an opinion. Children on beginning school soon learn that it is easier and quicker to obtain recognition from their teachers by remembering what the teacher says than it is by solving difficult puzzles of understanding. Teachers, in turn, find that students make better grades if they set examination questions that can be answered from memory. In addition, there are many subjects taught at school that require almost no understanding but do require students' remembering a good deal. The accent, therefore, is on remembering and not on ensuring that students understand, and this is where it should be. And so the average student who reaches university depends too much on memory and too little on understanding. Since such students have not experienced the real pleasure that comes from understanding, but only the dull drudgery of memorizing, they are not interested students. Next, since half-assimilated material is retained in the memory for only a short time, they soon learn that there is no point in their studying except immediately before examinations. But, since they are too conventional to be truants, they attend school between their bouts of cramming but only to put in time.

While the memorize-and-cram system, plus a minimum of understanding, will allow a student to reach university, it does not equip him for it. Hence in difficult university courses it is not unusual to find that a very considerable percentage of each new class will fail one or more of the first-term tests that are given. This is a crucial time and much depends on how such students react to an early failure.

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Some, like the horse in "Animal Farm", determine to "get up an hour earlier" and "work harder" by the same methods they have employed previously.

Some become aware of the fact that they cannot get along at university by scratching the surface of subjects; that they must understand more and really learn.

Some respond to the blow that their ego has received by putting the blame elsewhere than on themselves. They conclude that they are in the wrong course or at the wrong university, or that the teaching is poor, or that studying gives them headaches, or even that it is a lousy world and they want no part of it. Since these things may all be true to some extent, anyone who interviews students of this type should do so only on days when he feels bright and cheerful, otherwise the interviews may result in the interviewer being more affected by the interviewed than vice versa.

It is now time for some positive advice. How can most students be helped?

Most students who are beginning university can benefit from placing increasing dependence on understanding. A student should not let anything go by without doing his best to understand it thoroughly. Clarification should be sought immediately about any material that is presented but which is not understood; this can be done by asking questions and by reading about the subject in a textbook. If the prescribed book does not provide a proper explanation, try another book; some are much more explanatory than others.

In order to understand material it is essential to know the precise meanings of the words that are used to describe it. To learn new material it is necessary to learn many new words. Accordingly, every student should have an excellent medical dictionary and he should learn the meaning of each new word that he encounters. Next, the student should use these new words in conversation with other students; this is the only way to become sufficiently familiar with them to use them freely at examinations.

After any given matter is understood, the next step is to organize your knowledge about it. Break the material up into sections, and give each of these a heading of some kind. Make a list of the headings. Each heading will thereafter open up several associations, and so if you remember only the headings, the associated material will come along with them. With the headings in mind, explain the whole matter to a friend or, if necessary, to a blank wall. Once you have explained a subject from a list of headings you will remember it easily.

We must, of course, be practical. There are many things we must remember. To remember, it is essential to recall and review. Understanding does not guarantee memory but one or two recalls of anything that is understood will fix it firmly in the mind, and if a plan of organization of the material has been made, anyone from these few mental notes can give a long, thorough account of the whole subject.

Be impatient if you are not continually learning new things. Put a high value on your time and use it effectively.

Organize your time for study so that you neglect no subjects and apportion your study time to best advantage.

Since those who lecture to you will set the examinations that you will try, you should decide from your, and other student's, lecture notes, the general areas of a subject that are being covered in any course. You can get detailed information about any of these areas from your textbooks. Remember that your textbooks may contain more material than is covered in the particular course that you are taking; that is why an outline of your course, made from lecture notes, can be helpful in delineating the amount that you must learn. In each area of any subject try to distinguish between matters of greater and lesser importance and learn the former well.

Students in general would do much better if they stopped thinking of themselves as students who are supposed to learn answers to questions that teachers will ask them on examinations. If students would think of themselves as potential teachers they would study much more effectively. A student should study a subject as if he were preparing to give an informative course of lectures on it. Any student who studies this way can answer examination questions much better than a student who studies in order to answer examination questions. After all, there is little difference between answering an essay-type of question, or giving a lecture on a given subject.

And now a little advice about writing examinations.

It is natural to be nervous about trying examinations but the better prepared you are the less nervous you will be. Of course, there are other things that you might do to allay undue nervousness. For example, I have heard of one student who found that drawing all his money from the bank before examination day, and keeping it in his pocket while he wrote, gave him extra confidence. Or you can reassure yourself by thinking as you enter the examination hall that the day will pass even if you do not.

In reading about ten thousand examination papers I have made one discovery that to my knowledge has never been described. Fear of the not-known is a very important factor in examination nervousness, and it makes students do some very odd things. I shall explain this fully. Most students, even though they may have a good grasp of a subject, are aware that there are one or two things about which they have only very vague knowledge. These haunt them and their spectre will rise in every question that they read. To give an example, there is a newly discovered

phenomenon called "acquired tolerance to proteins". This phenomenon is manifested by an animal's never being able to effectively make antibodies against protein antigens to which it has been exposed during fetal life or in the early hours of postnatal life. Let us suppose a student has heard of this phenomenon, does not know anything about it, but thinks it might be in an examination. When he attends the examination the first question that he reads is "Discuss the effects of the hormones of the anterior pituitary gland, the adrenal cortex and the testes on protein metabolism." There is that word PROTEIN. He knew something would be asked about acquired tolerance to proteins. Now, of course, nothing is asked about it, in fact the person who set the question may not even know there is such a thing. But ten-to-one the student will bring into his answer the subject that he fears and about which he knows nothing.

This brings up a very important matter. Be sure to read every question carefully and then answer the question that is asked. Remember, if you are not very careful, examination nervousness will make you think that questions relate to matters of which you are afraid when in reality they relate to something that you know reasonably well.

Remember that associations can lead you away from answering the question that is asked. A student may begin by describing the hormones of the anterior pituitary gland and then, before he knows what has happened, he has written a page on the posterior lobe hormones. I once marked an examination answer in which, after the first line or two, the student went on from one association to another and none of these related to the question. He evidently re-read his answer before turning in his paper, because he added one sentence at the end, as an afterthought, which, in a general way, answered the question that was asked. I was able to give him a pass mark for that one sentence; all that went before it was worthless. So always leave enough time to re-read your answers to see that you have answered the question that was asked.

The law of diminishing returns operates in answering examination questions. By writing one page you can earn probably three-quarters of the marks allotted for a question. By writing two pages you may earn a few more marks. By writing four pages you may run the risk of losing marks by disclosing ignorance that had hitherto not been apparent. But by writing four pages on each question you may not be able to answer all the questions. Always arrange your time to at least skim the cream from every question.

And finally make sure that somewhere above a long list of examination questions there is not a little statement reading "only attempt five". These pleasant words, of course, are not above every list; they do not, for example, precede the Ten Commandments.

L'ENSEIGNEMENT DE LA MEDECINE A QUEBEC*

J.-B. JOBIN, M.D.,† *Québec, Qué.*

L'INAUGURATION de notre nouveau pavillon de la Médecine et le XXVIIe congrès de l'Association des Médecins de Langue Française du Canada m'ont semblé être une occasion toute indiquée de faire le point dans ce domaine de l'éducation médicale qui nous est confié.

En examinant nos conditions locales de travail et en observant ce qui se passe ailleurs, nous tâcherons de découvrir ce qui chez-nous mérite d'être conservé ou doit être modifié.

Pour nous, l'éducation médicale doit se concevoir dans l'ambiance qui est la nôtre, c'est-à-dire une ambiance catholique, française et canadienne, et l'obligation de conserver des caractères distinctifs ne doit pas nous empêcher de jouer pleinement notre rôle sur le plan national de même que notre particularité linguistique ne doit pas nous confiner dans un isolement qui n'aurait rien de constructif.

L'enseignement de la médecine doit se faire suivant certains principes directeurs qui font l'objet d'études constantes de la part des éducateurs.

C'est ainsi qu'il ne faut pas chercher à tout enseigner. C'est là une impossibilité matérielle. Il faut enseigner l'essentiel et par ailleurs tâcher de faire acquérir à l'élève une méthode de travail qui lui permettra de compléter lui-même sa formation professionnelle de manière à pouvoir plus tard capter et retenir la confiance de ses patients, "le respect de ses confrères et la collaboration du public".

L'importance des découvertes scientifiques de ces dernières décennies a conduit les médecins à s'éloigner quelque peu du malade pour s'intéresser davantage à la maladie; mais, sans négliger aucune des ressources que la science moderne met à la disposition du médecin, celui-ci doit réaliser que sa pratique ne peut se faire sans une compréhension

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*Texte d'une allocution prononcée le 20 septembre, 1957, à Québec à une séance académique conjointe à l'occasion de l'inauguration du nouveau pavillon de la médecine, et du XXVIIe Congrès de l'Association des Médecins de Langue Française du Canada.

Cette allocution est un résumé quelque peu modifié d'un article publié dans le numéro spécial du *Laval Médical*, à l'occasion de l'inauguration du nouveau pavillon.

†Doyen de la faculté de médecine, Université Laval.

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parfaite du patient avec ses problèmes de famille, de budget ou de travail qui viennent toujours s'ajouter au problème purement médical et souvent même le compliquer.

C'est dans ce sens que l'étudiant doit être éduqué du premier au dernier jour de sa formation médicale. L'enseignement des sciences de base, de même que l'enseignement clinique, ont chaque année des exigences plus grandes qui nous imposent l'obligation de reviser constamment nos programmes et de nous assurer les services d'un plus grand nombre de professeurs.

Pour atteindre cet objectif nous sollicitons l'appui de tous ceux qui contribuent à l'enseignement: professeurs, administrateurs d'hôpital, autorités universitaires et même, autorités gouvernementales.

Le premier problème qui se pose à l'éducateur est celui de l'admission des candidats. Comme il nous est impossible d'admettre tous ceux qui se présentent, et cela à cause du nombre limité de lits dont nous disposons dans les hôpitaux pour l'enseignement clinique, force nous est donc de faire une sélection.

L'idéal serait de n'accepter que les candidats qui auraient toutes les qualités physiques, intellectuelles et morales d'un homme parfait. Comme cet idéal est irréalisable, notre choix doit s'arrêter sur ceux dont la personnalité, l'intelligence, le sens moral et le sens civique nous permettent de prévoir qu'ils seront plus tard bons citoyens tout autant que bons médecins.

Pour en arriver là nous disposons d'un certain nombre de critères qui sont: les résultats académiques antérieurs du candidat, un rapport confidentiel de celui qui a été leur préfet des études, un certificat du médecin de famille de préférence, une entrevue personnelle avec chacun des candidats, et, dans certains cas particuliers, les tests d'aptitude et d'orientation.

On constate parfois que les nouveaux élèves arrivent avec une préparation scientifique insuffisante. C'est un fait et il serait désirable que cette lacune soit comblée car cette préparation est indispensable à la compréhension de l'aspect scientifique de la médecine, mais il n'en reste pas moins que l'étude attentive des humanités est tout aussi importante que celle des sciences car elle prépare l'élève à envisager les problèmes concrets avec un esprit capable d'idées générales et de synthèse.

Dans l'ensemble la préparation de nos élèves doit être bonne puisque, au cours de leurs études post-universitaires où qu'ils soient, ils se comparent facilement aux meilleurs. Nous restons donc convaincus que la formation gréco-latine est encore la meilleure préparation à l'étude de la médecine.

En arrivant à l'Université, le nouveau venu se sent devenir un adulte qui doit prendre ses responsabilités et également une part active à sa propre formation.

La prise de contact avec les autorités universitaires et avec les professeurs sera d'autant plus facile que ces derniers seront mieux préparés à exerçer une influence heureuse sur les élèves à qui ils doivent s'efforçer de faire aimer les études et le milieu universitaire. Les travaux pratiques dans les laboratoires et au lit du malade fournissent d'excellentes occasions de multiplier les contacts entre élèves et professeurs et d'atteindre ce but. La prise de contact du nouveau venu avec ses confrères a également de l'importance et à ce point de vue la nouvelle maison des étudiants, le magnifique pavillon Biermans Moreau, est appelée à jouer un rôle réellement important.

Enfin, l'étudiant doit prendre contact avec les citoyens de la ville où se trouve son université. Si la vie sociale comporte des dangers qu'il faut savoir éviter, elle peut aussi avoir des avantages, et à tout évènement l'étudiant doit apprendre à s'y conduire toujours comme un parfait gentilhomme.

L'étudiant, comme tout individu d'ailleurs, a souvent besoin d'un conseiller à qui il pourra parler en toute confiance et d'homme à homme. Ce conseiller, il doit pouvoir le trouver parmi ses professeurs qui mettront à sa disposition non seulement leurs connaissances pédagogiques mais aussi leur expérience d'homme.

Le cours de médecine proprement dit commence par les années pré-cliniques qui conduisent à la connaissance de la constitution et du fonctionnement de l'homme normal par le truchement de l'étude des sciences de base. Sciences de base qui ont pris la vedette au cours de ces dernières années dans le domaine de l'éducation médicale et qui permettent de mieux comprendre les phénomènes physico-chimiques qui se produisent au sein de nos organes à l'état normal et à l'état de maladie.

La somme de ces connaissances est tellement grande qu'il est impossible à l'élève de l'acquérir toute. Il lui faut donc faire un choix et acquérir une méthode de travail et une discipline de l'esprit qui lui permettront de parfaire sa formation professionnelle par une participation active à sa propre formation.

L'enseignement de ces différentes sciences de base doit être orchestré de telle manière que l'élève puisse voir les relations qui existent entr'elles. C'est ainsi que si les professeurs d'anatomie, d'histologie, de physiologie, et de biochimie s'entendent pour parler à peu près dans le même temps d'un organe déterminé, l'élève pourra comprendre plus facilement les relations qui existent entre la structure anatomique de cet organe, son fonctionnement et les réactions physico-chimiques qui en découlent.

Le professeur doit aussi constamment s'efforçer de faire comprendre les applications cliniques qu'auront plus tard ces notions qui peuvent souvent avoir un aspect purement théorique au premier abord.

L'enseignement de ces sciences de base ne peut se faire sans que l'enseignement théorique ne soit complété par des travaux pratiques au laboratoire. Cela exige toute une équipe de professeurs, d'aides

et de moniteurs avec à sa tête un professeur à plein-temps qui consacre toutes ses énergies à l'enseignement de la matière qui lui est confiée.

Dans ces laboratoires il faut également que les professeurs se consacrent à des travaux de recherche. La recherche n'est pas un amusement de l'esprit pour dilettantes, et elle n'est pas non plus réservée à certains milieux spécialisés. Elle est indispensable à tous les enseigneurs pour qu'ils maintiennent leur enseignement à un niveau supérieur; elle est également indispensable à l'université dont le prestige et le rayonnement dépendent de la valeur des publications scientifiques de ses professeurs.

La recherche a déjà pris de l'importance dans notre milieu.

Pour réaliser un enseignement qui soit conforme aux principes que je viens d'énonçer, il faut donc que cet enseignement soit sélectif et complété par de nombreux travaux pratiques au laboratoire, il faut que l'élève prenne une part active à sa propre formation, et il faut enfin que l'équipe des professeurs soit nombreuse et qu'elle alimente son enseignement par des travaux de recherche.

Au cours des 3ième et 4ième années l'élève apprend à connaître l'homme malade. Cela se fait en partie à l'école sous forme de leçons théoriques mais surtout à l'hôpital sous forme d'enseignement clinique. La tendance moderne en effet est de mettre l'accent sur l'enseignement clinique qui permet à l'étudiant d'avoir avec les malades ces contacts humains sans lesquels on ne peut comprendre toute la portée des problèmes médicaux avec leurs répercussions presque inévitables sur l'équilibre psychologique ou budgétaire du patient.

On doit s'efforcer d'enseigner à fond les problèmes fondamentaux de la médecine et d'éveiller chez l'étudiant cette curiosité intellectuelle qui lui permettra toute sa vie durant de rester au courant des progrès constants de la médecine, car elle change rapidement cette médecine et les maladies comme les individus naissent, vivent et meurent. C'est ainsi que la pneumonie franche, la typhoïde et la diphtérie ont pratiquement disparu pour céder la place aux maladies de dégénérescence, aux maladies du vieil âge, aux névroses et maladies mentales, aux maladies professionnelles et aux accidents du travail et de route.

L'élève doit être soigneusement initié à ces nouveaux aspects de la médecine.

Par ailleurs il ne peut plus se contenter d'apprendre les symptômes d'une maladie, il faut qu'il sache comprendre les perturbations anatomiques et biochimiques qui se produisent au sein de l'organisme humain quand un facteur bactériologique, physique, chimique ou psychique vient en perturber le fonctionnement. C'est la connaissance des sciences de base qui le renseignera sur ces problèmes. Pour initier l'étudiant à la pratique de la médecine en clientèle privée, ce qui est en somme le but de la majorité des étudiants, l'idéal serait de faire l'enseignement au domicile du malade où il pourrait voir de ses yeux tous les problèmes qu'entraîne la maladie.

Malheureusement cela est pratiquement impossible dans nos hôpitaux d'enseignement, les malades se présentent trop souvent avec des maladies rares ou difficiles. On peut cependant compenser, pour une part, en utilisant pour fins d'enseignement les consultations externes et les dispensaires où les malades se présentent un peu comme au cabinet particulier du médecin. Il n'en reste pas moins que dans la très grande majorité des cas l'enseignement clinique se fait au lit des malades hospitalisés.

Or cet enseignement est confronté aujourd'hui, dans notre milieu tout particulièrement, avec un problème angoissant: celui de la diminution alarmante des malades dits de salle et qui sont habituellement utilisés pour l'enseignement.

Cette diminution est due à la multiplication des plans d'assurance hospitalisation et au haut standard de vie de nos gens. Pour compenser, nos professeurs utilisent de plus en plus leurs malades privés qui, il faut le dire et les en remercier, se prêtent à ces exigences de l'enseignement avec une très grande générosité.

Mais cela ne suffit pas, et si nous voulons que les hôpitaux actuellement affiliés à l'Université puissent dispenser un enseignement clinique convenable, il faudra de toute nécessité veiller jalousement à sauvegarder la vie des services cliniques, il faudra introduire des professeurs à plein-temps dans l'enseignement clinique, et il faudra également, à mon avis, en arriver à accepter l'idée de la nécessité d'un hôpital universitaire.

Cette nécessité paraît aujourd'hui évidente dans tous les milieux où la question de l'éducation médicale est à l'ordre du jour. Je suis convaincu que Québec n'échappe pas à cette nécessité et que nous n'en arriverons jamais à régler notre problème d'enseignement clinique sans les services d'un hôpital universitaire. Espérons que cette réalisation ne se fasse pas trop attendre.

Notre cinquième année est consacrée à un internat junior qui se fait dans des hôpitaux affiliés à la faculté de médecine et sous la surveillance immédiate des professeurs de la faculté. Le diplôme de docteur en médecine et le droit de pratique ne se donnent à nos élèves qu'après la cinquième année. C'est ce que l'on appelle un internat contrôlé; par opposition à l'internat libre qui existe dans toutes les écoles de médecine du Canada, sauf à Halifax, à l'université de Montréal et à Québec.

Nous subissons en ce moment de fortes pressions pour nous conformer à la manière générale d'agir et nous résistons car nous sommes profondément convaincus que notre internat contrôlé est excellent, et, à mon humble avis, supérieur à l'autre qui laisse l'élève libre de choisir, pour y faire son

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internat, l'hôpital qui offre le plus gros salaire de préférence à celui qui offre le meilleur enseignement.

Chez-nous l'internat est contrôlé et surveillé, et, dans plusieurs de nos hôpitaux d'enseignement, l'université paye un jeune médecin pour se consacrer entièrement à la surveillance et à l'éducation des internes. On l'appelle le Moniteur des Internes, et à mon sens, son rendement est tellement bon que je voudrais en voir au moins un dans chaque hôpital d'enseignement. C'est une première manière d'avoir des professeurs à plein-temps dans les départements cliniques.

Les devoirs officiels de la faculté à l'égard des étudiants prennent fin à l'expiration du cours régulier de médecine, mais nous ne pouvons pas nous désintéresser de ceux qui font de la résidence ou qui poursuivent des études de spécialisation comme cela se fait dans nos propres hôpitaux et à l'étranger.

Depuis l'an dernier, à la suite de pourparlers poursuivis depuis des années, et grâce au dévouement d'un certain nombre de Canadiens et de Français, dont notre excellent ami de toujours, le professeur agrégé Raoul Kourilsky, de Paris, et grâce à la très précieuse collaboration de M. Lacoste et de ses collègues du ministère des affaires étrangères de France, nous disposons d'un certain nombre de postes de résident dans les hôpitaux de Paris. Ces postes sont officiellement reconnus tant en France qu'au Canada et ils offrent des avantages considérables. Quelques-uns des nôtres sont en place depuis octobre dernier et le résultat est tel que le professeur Lenègre pouvait écrire récemment: "Ce n'est pas un succès, c'est un triomphe". Espérons que ces postes se multiplient car ceux qui auront obtenu une telle formation contribueront, j'en suis sûr, à imprimer à la médecine canadienne-française un caractère d'originalité qu'elle se doit d'acquérir.

C'est pendant ces années de résidence que le jeune médecin poursuit ses études de spécialisation et qu'il reprend l'étude des sciences de base avant de se présenter aux concours du Collège des Médecins et Chirurgiens de la Province de Québec ou du Collège Royal des Médecins et Chirurgiens du Canada.

Je ne veux pas entrer dans le détail de ces programmes ni prendre parti pour tel système de préférence à tel autre, en particulier en ce qui concerne l'enseignement des sciences de base, mais je tiens à ce que l'on sache que la faculté de médecine de Québec voit d'un œil très sympathique les cours de spécialisation qui s'organisent chez-nous, les uns après les autres, grâce aux initiatives de quelques groupements hospitaliers, qu'elle est toujours prête à prêter son concours et qu'elle attend l'occasion d'entrer en scène pour coordonner les différentes initiatives locales afin de mettre à la disposition de tous ceux qui veulent poursuivre des études de spécialisation les avantages dont disposent chacun des groupements hospitaliers. Ce que nous voulons c'est une mise en commun des forces constructives dans le domaine de l'éducation médicale post-graduée.

Mais me serait-il permis d'ajouter que, même si Québec possédait le meilleur centre médical du monde, je penserais encore qu'il est sage d'aller à l'étranger pendant ces années d'étude post-universitaires pour pouvoir, d'une part, faire bénéficier plus tard Québec d'une culture plus vaste, mais aussi pour acquérir une connaissance parfaite de la langue anglaise, ce qui me semble indispensable à une collaboration plus efficace et plus agréable avec nos collègues de langue anglaise.

Voilà, Mesdames et Messieurs, en résumé et dans un style forcément quelque peu télégraphique, les quelques réflexions sur l'enseignement de la médecine à Québec que le temps qui m'était alloué m'a permis de vous communiquer.

Ceux que la chose intéresse pourront trouver le texte intégral dans le numéro spécial du Laval Médical qui est publié à l'occasion de l'inauguration de notre nouveau pavillon de la médecine.

Et, en guise de conclusion, qu'il me soit permis de dire que si je suis parfaitement conscient de la nécessité d'apporter certaines modifications à nos méthodes et à nos programmes d'enseignement et qu'il ne serait pas honnête, pour réaliser ces modifications, d'ignorer ce qui se fait dans les grands centres médicaux du monde, de même je réalise qu'il serait ridicule et néfaste de prétendre à une imitation servile de systèmes qui occupent pour le moment la vedette.

Changement n'est pas toujours synonyme d'amélioration et j'ai assez vécu pour savoir que les méthodes qui ont subi l'épreuve du temps ne doivent pas être abandonnées sans mûre réflection.

Pour continuer dans la voie qui avait été si sagement tracée par mon illustre prédécesseur, le toujours regretté doyen Vézina, et sans vouloir nous cristalliser dans un système que nous savons perfectible, n'abandonnons pas à la légère une méthode d'éducation médicale, inspirée d'humanisme et de charité chrétienne, tout autant que de compétence et de curiosité scientifiques, et qui nous a permis, depuis des décennies, de fournir à la population du Québec des médecins dont la compétence et la probité ne laissent en rien à désirer.

SUMMARY

In the Faculty of Medicine, Laval University, medical education proceeds in an atmosphere which is Catholic, French and Canadian; the need to preserve these three distinctive characteristics should not prevent the university from playing its full part in the Canadian nation. Medical education should be subject to certain guiding principles which are constantly under study. It is impossible to teach the student everything; he should be taught the essentials and shown how to work so as to complete his own education. Modern medicine has tended to show greater interest in the disease than in the patient, but the student must be made to realize that he cannot practise without studying the patient and his problem

(familial, economic or occupational). The growing demands of the medical curriculum oblige the Faculty to revise its programs constantly and to solicit the help of all who can assist in education—teachers, hospital administrators, university authorities and even government authorities.

The first problem is to select suitable students. Ideally they should have perfect physical, mental and moral qualities; in practice the choice must lie on those whose personality, intelligence and moral and civic sense suggests that they will later be good citizens as well as good physicians. Selection is assisted by confidential reports from their teachers, their family physician and a personal interview. The Faculty is convinced that the classical education of its students is still the best preparation for the study of medicine, though occasionally students arrive with an insufficient grounding in science.

The newcomer to the university has to make contact with his teachers (this is facilitated by practical work and bedside work), with his fellow students (this will be helped by the new residence) and with the citizens of Quebec. In addition he has need of a personal counsellor.

In his preclinical years, the pupil must learn to choose the important parts of his subjects and participate actively in his education. Emphasis is also laid on co-ordinated teaching in anatomy, histology and physiology, as well as on clinical applications.

Theoretical teaching must be accompanied by laboratory work, and these laboratories must also be used for research by the Faculty. The use of the laboratories for research and teaching implies an adequate number of teaching personnel.

In his clinical work in the third and fourth years, the student is confronted with the patient as a person, and efforts are made to stimulate his intellectual curiosity. However, study of clinical features is accompanied by study of the basic disturbances of structure and function. Unfortunately it is not possible to carry on teaching in the patient's home, though growing use is made of out-patient departments. Nevertheless, most clinical teaching is at the bedside in hospitals, and this is threatened by the alarming diminution in public ward patients. This diminution is associated with the multiplication of hospital insurance plans and the high standard of living; however, clinical teachers are using their private patients more and more, and finding the latter co-operative in teaching.

This problem means that the university must jealously watch over its public ward beds, that it must introduce full-time teachers in clinical teaching, and that it must eventually have a university hospital.

The fifth year finds the student as a junior intern in hospitals affiliated with the Faculty of Medicine and under the supervision of Faculty teachers. The diploma of M.D. and the right to practise are only given to Laval pupils after the fifth year. This is in contradistinction to the practice in most medical schools of Canada. The Faculty at Laval is convinced that this system of a controlled internship is superior to the other system, in which the student is allowed to choose from among a great number of hospitals for his internship. In Quebec, a paid monitor of interns is used to supervise the education of the interns.

Although the official duties of the Faculty end when the student receives his M.D., the Faculty feels obliged to watch over the interests of those who are residents or pursuing specialist studies. Of recent years, through the collaboration of the French government, a certain number of posts as residents in Paris hospitals are available. Several Laval students have occupied such posts since October 1956, and the result has been highly successful. The Faculty is also very sympathetic to postgraduate courses which are now being organized in Quebec, and is always willing to assist in such organization. Nevertheless, Laval students would be wise to spend some time in postgraduate studies elsewhere, to acquire a wider culture as well as a perfect knowledge of English.

L'ENSEIGNEMENT DE L'ANATOMIE A LAVAL

"There can be no doubt that Anatomy, as a science, is still in a malleable, if not in a fluid, state".—BARRY J. ANSON.

PIERRE JOBIN, M.D.,* *Québec, Qué.*

PARLER de l'enseignement de l'anatomie paraît aux uns un inutile lieu commun pour professeurs à la retraite, parce que, disent-ils, l'anatomie s'apprend mais ne s'enseigne pas; pour d'autres, c'est un inquiétant point d'interrogation qui laisse en suspens l'enseignement d'une matière vieille comme le monde parce que, de tous temps, on a cherché un difficile équilibre entre deux méthodes antagonistes, l'une encyclopédique qui veut tout dire dans le cours mais qui offre l'inconvénient d'étouffer chez l'étudiant l'initiative et la curiosité intellectuelle, l'autre, faite d'induction, où l'étudiant doit se contenter du cadavre et du livre, parce qu'il ne reçoit pas ou prou d'enseignement formel.

Notre expérience nous a entraînés à instituer à Laval un système d'anatomie dynamique et intégrée qu'il me plaît infiniment de publier dans *The Canadian Medical Association Journal* car je pense qu'il possède, bien qu'encore imparfait, une saine pédagogie et qu'il aide véritablement l'étudiant à acquérir une bonne formation médicale.

INTÉGRATION

L'on sait que la neuro-anatomie est dans bien des endroits enseignée selon une très efficace méthode d'intégration: on en voit non seulement la morphologie au cours des différents âges, tant à l'oeil nu qu'au microscope, mais aussi on en fait la physiologie. C'est un enseignement vertical qui contribue merveilleusement à donner à l'élève une

*La faculté de médecine, Université Laval.

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véritable formation. Mais il est assez rare que l'on puisse appliquer à tous les chapitres de l'anatomie la méthode qui convient si bien au système nerveux. Après enquête, j'ai appris que l'intégration était facteur des hommes voués à l'enseignement, c'est-à-dire des gens qui étaient prêts à abandonner leurs habitudes et leurs exigences personnelles pour se soumettre généreusement à une méthode d'intégration, le tout en faveur de l'élève. De plus, l'expérience démontre que tous les chapitres ne sont pas également susceptibles de s'adapter facilement à cette méthode parce qu'il y a prévalence d'un aspect sur l'autre, par exemple l'ostéologie qui est beaucoup plus longue en macroscopie qu'en microscopie. Mais avec de la bonne volonté, on finit par agencer dans le temps passablement bien l'enseignement des trois aspects d'une même matière.

Je tiens à souligner l'importance d'un enseignement poussé de l'histologie, car les tissus sont aujourd'hui l'élément dominant en physiopathologie. La cytologie permet de comprendre les phénomènes métaboliques mais les tissus et leur physiologie sont essentiels à la compréhension de certains phénomènes pathologiques jusqu'ici inexpliqués, v.g. les lésions post-traumatiques. Le grand chirurgien français René Leriche attire justement l'attention sur la connaissance parfaite de la neurologie autonome et de l'histologie pour bien comprendre tous les phénomènes, même les plus complexes de la pathologie.

Pour aider convenablement l'élève dans cette intégration, il faudrait que les enseigneurs eux-mêmes soient capables de dépasser le compartimentage de leur spécialité et qu'ils puissent indifféremment enseigner l'anatomie macroscopique, l'histologie ou l'embryologie, ce qui n'est pas toujours possible. Du point de vue de l'élève, l'idéal serait d'avoir un professeur qui enseigne tout d'un système, v.g. le tube digestif avec descriptions et rapports anatomiques, l'histologie du tube et des glandes annexes, salivaires, hépatiques et pancréatiques, et enfin l'organogénèse.

COURS

Avant de procéder à la dissection topographique, nous faisons un enseignement formel de l'anatomie descriptive où l'on présente l'un après l'autre les systèmes au complet; la neurologie est cependant reportée à la fin de l'année. Nous complétons ces cours par des séances de travaux pratiques avec démonstrations et les élèves s'entraînent à y faire de l'anatomie de surface et des tests fonctionnels sur le vivant. En général, nous donnons un cours théorique pour deux heures de travaux pratiques mais nous augmentons progressivement ces dernières pour atteindre bientôt trois heures.

Nous croyons que le cours doit être sélectif et non encyclopédique, c'est-à-dire qu'il doit offrir assez de notions et de faits pour permettre à l'étudiant de mieux comprendre sa médecine. Il ne faut pas donner tous les détails, car nous ne cherchons pas à faire de nos élèves des techniciens ou des spécialistes. Nous n'enseignons pas l'anatomie pour elle-même mais nous montrons à des hommes comment l'étudier et comment l'intégrer dans le tout médical. "A floor of learning rather than a ceiling".

L'anatomie est une matière merveilleuse qui développe l'esprit d'observation et l'enseigneur facilite l'intégration en illustrant son cours par des allusions aux matières connexes puis par des applications au vivant, à la clinique et à la recherche, car la morphologie est la voie d'approche des fonctions.

Pendant nos cours, nous utilisons assez généreusement les projections à l'écran, les dessins au tableau noir et les démonstrations sur des pièces préparées, artificielles ou naturelles.

Quoiqu'il en soit, à Laval, nous faisons, en plus d'une dissection complète, un enseignement formel de l'anatomie systémique parce que l'étudiant a besoin qu'on lui élargisse son angle de vision et que c'est encore dans un cours qu'on peut le mieux faciliter l'intégration et la synthèse, d'autant plus que nos élèves sont des latins et que cet enseignement par systèmes correspond à un goût naturel pour la synthèse et les vues d'ensemble.

TRAVAUX PRATIQUES

Nos élèves son répartis par groupes de quinze; chaque groupe est sous la direction d'un moniteur et ils travailleront ensemble pendant toute l'année. Nos moniteurs sont recrutés parmi les résidents des hôpitaux universitaires et ils nous donnent un excellent rendement parce qu'ils trouvent dans ce monitorat un intérêt nouveau et le stimulant préceptoral dont les élèves sont l'occasion.

Nos travaux pratiques comportent deux aspects bien distincts: l'anatomie de surface et l'anatomie de dissection. Durant la première partie, on présente l'anatomie de surface sous la forme d'un programme écrit par semaine: le lundi, c'est la mise en train avec les explications et les références nécessaires; chacun se prépare dans l'étude à exécuter les différentes épreuves qu'on lui soumet. A partir du mardi, les groupes se réunissent sous la direction de leur moniteur et s'entraînent à tracer sur eux-mêmes au crayon gras les repères anatomiques (les élèves travaillent deux à deux). Voici des exemples extraits des feuilles de travaux pratiques que l'on remet aux élèves pour vous indiquer le genre de travail accompli: crayon dermographique en main, à l'aide de la palpation, de la règle à mesurer et de la radiographie, chacun s'efforce de mettre en évidence le tracé en surface des organes profonds.

Os: clavicule — sternum — côtes — omoplate — colonne vertébrale — bassin — crâne et face.

Muscles: le grand dorsal — le trapèze — le grand pectoral — les muscles de la paroi abdominale — les muscles masticateurs et de la mimique — le sterno-cléido-mastoïdien, etc.

Cœur: aire cardiaque – les quatre orifices – projection des gros vaisseaux – dissection d'un cœur de porc.

Poumons: projection des poumons – des scissures – des plèvres – de la trachée et des bronches – dissection d'un poumon de porc.

Abdomen: limites – repères osseux – divisions régionales et projection des viscères (estomac, foie, intestin grêle et côlon, rate, reins, uretère, appendice).

Avant de travailler sur lui-même, l'élève assiste à une démonstration sur le cadavre puis à une vivisection chez le chien pour connaître l'aspect des tissus vivants.

DISSECTION

Tous les jours pendant trois mois, les élèves consacrent deux heures à disséquer un cadavre entier, à raison de quatre élèves par table. C'est à ce moment que l'on rappelle l'anatomie de surface sur le vivant et que l'on étudie tous les aspects descriptifs et topographiques des membres supérieur et inférieur, avec tracé dermographique des vaisseaux, des nerfs, des points de repère osseux et articulaires puis des tests de fonction musculaire.

COLLOQUE

Le moniteur et ses quinze élèves s'assoient ensemble pendant deux heures pour revoir la matière de la semaine dans un colloque sans apprêt. L'élève répond aux questions en utilisant le tableau noir, le squelette, les pièces ou son voisin. Chacun est appelé à tour de rôle à exposer devant ses confrères le sujet qu'on lui propose sans préavis et s'entraîne ainsi à l'art difficile de s'exprimer en public – "ce que l'on conçoit bien s'énonce clairement" – En cas d'insuffisance, c'est un confrère qui vient à la rescousse, ou encore, pour défendre une opinion contraire, c'est toute une discussion qui s'engage spontanément dans le groupe, sous l'œil vigilant du moniteur.

Ce colloque d'anatomie est pour l'élève une occasion précieuse de poser ses questions sur l'importance du sujet en cause, sur le fonctionnement normal ou pathologique de tel organe dont on n'étudie en première année que la morphologie. C'est ainsi que le dynamique s'ajoute au statique et que le moniteur prolonge l'enseignement théorique en intégrant la matière dans toutes ses applications médicales.

Pour juger de mon système et tâcher de l'améliorer, j'ai remis à des élèves échantillonnés (13 sur 130) un long questionnaire auquel je demandais des réponses franches sous le couvert de l'anonymat. Ils ont été unanimes à aimer les applications au vivant, à la clinique et à la recherche; ils ont même demandé d'augmenter l'anatomie de surface, surtout pour le tronc; ils ont suggéré que le moniteur surveille plus étroitement et contrôle plus sévèrement les travaux pratiques, enfin que, pendant les colloques, on exige une plus grande correction du langage et une présentation plus soignée des sujets. J'ai trouvé dans mes propres élèves d'excellents collaborateurs pour l'amélioration de l'enseignement d'une anatomie dynamique.

ENSEIGNEUR

"Enseigner, c'est faire aimer la matière". Pour moi, les fonctions les plus importantes du professeur sont d'abord d'aider l'élève à perfectionner sa méthode de travail puis de faire naître en lui le désir, le goût d'étudier par lui-même sa matière.

"Ce qu'un professeur peut encore donner de mieux à ses élèves, a-t-on écrit, c'est une idée générale ou une référence". D'accord, mais il peut aussi leur donner une bonne méthode de travail, leur apprendre, par l'exemple et la parole, à aborder méthodiquement une science appliquée car nos élèves nous arrivent presque tous du cours classique où ils ont acquis une bonne culture par l'étude des humanités gréco-latines mais il faut bien se rendre à l'evidence que, pour étudier la médecine, il faut une tournure d'esprit beaucoup plus pratique.

C'est ainsi que, dans notre milieu français, du moins pour la plupart de nos élèves, il faut leur donner des indications très précises sur la méthode de travail, et particulièrement sur les trois points suivants: comment suivre un cours, comment lire un livre, comment exécuter des travaux pratiques.

(a) *Comment suivre un cours:* l'élève doit toujours, avant d'assister à un cours, prendre du sujet annoncé une connaissance au moins générale et superficielle, soit en lisant le livre, soit en examinant attentivement les graphiques et leurs légendes. Il ne comprendra pas tout mais la parole de l'enseigneur tombera sur un terrain préparé et sera d'autant plus compréhensible que l'élève se sera déjà familiarisé avec les mots et les choses.

Pour suivre profitablement un cours, l'élève, après s'être débarrassé de son livre, n'a besoin que d'un crayon et d'une feuille de papier à la condition toutefois d'être tout yeux et tout oreilles. L'intelligence en éveil reconnaîtra facilement le sujet, en saisira l'agencement et les grandes divisions; l'élève notera sur sa feuille d'un mot-clef ce qui lui paraît nouveau et important. Il sort du cours avec une simple feuille couverte de notes et de dessins qui seraient incompréhensibles aux autres, mais qui, pour lui, serviront à éclairer le volume.

(b) *Comment lire un livre:* je suggère une simple méthode à trois temps: tout lire, souligner l'important et relire le souligné. *Tout lire,* parce que le cours n'est pas encyclopédique et que le livre traite complètement le sujet. *Souligner l'important:* il y a trois sources d'information pour trouver ce qui est important: l'auteur, le professeur et l'élève lui-même. *Relire le souligné* pour apprendre et retenir la matière: cette lecture à gué met du relief dans une matière uniforme, résume un texte abondant et schématise les parties les plus impor-

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tantes. Cette seconde lecture faite lentement et attentivement nous donne une vue d'ensemble et il suffira, avant de refermer le livre, d'un petit effort de concentration pour voir d'un seul coup d'œil le sujet étudié. C'est ainsi qu'on aide sa propre mémoire en lui offrant une porte d'entrée simplifiée dans une vaste matière.

Les notes prises au cours sont déjà en partie utilisées car ce qui y était inscrit est maintenant souligné dans le livre. S'il reste encore des annotations utiles, on peut les inscrire dans la marge ou glisser un dessin entre deux pages. De sorte que tout le matériel utile que contenait la feuille de notes est dorénavant profitable parce que conservé dans un livre: on peut donc et on doit jeter au panier les notes de cours, car elles deviennent vite incompréhensibles, étant trop squelettiques.

(c) *Comment exécuter des travaux pratiques:* avant d'aborder une séance de travaux pratiques, l'élève doit étudier et acquérir toutes les connaissances théoriques que l'auteur et le professeur lui ont dispensées. Il doit même beaucoup étudier car ni le cadavre, ni la lame, ni le voisin ne seront jamais assez éloquents par eux-mêmes pour lui révéler toute la science nécessaire. Puis, c'est le livre en main qu'un élève dirige la dissection de son confrère ou l'exécution des exercises proposés d'anatomie de surface et des tests de fonction: je conseille de procéder lentement sous l'œil toujours critique d'un confrère, puis de soumettre le travail au contrôle du moniteur et enfin de reproduire en dessins le travail exécuté à chaque séance.

Par ailleurs, pour compléter la méthode de travail, je recommande à mes élèves d'étudier chaque jour la matière enseignée et d'employer les fins de semaine pour se mettre parfaitement à date en repassant la matière.

Le rôle du professeur est donc d'aider l'élève à perfectionner sa méthode de travail et à lui faire aimer la matière en lui montrant à suivre un cours, à lire un livre et à exécuter des travaux pratiques.

FORMATION DE L'ENSEIGNEUR

Comme nous voulons l'intégration des trois matières connexes (anatomie, histologie et embryologie) afin de donner à l'élève une meilleure formation médicale, il convient donc de former les jeunes enseigneurs à ces mêmes trois disciplines. Ils pourront ensuite les enseigner indifféremment, quittes à se spécialiser dans l'une d'elles afin de poursuivre des recherches fondamentales plus poussées. Il faut de plus mettre de la biologie à la base de leur formation post-scolaire car l'enseignement autant que la recherche exige que l'on passe de la morphologie statique à la physiologie dynamique.

RÉSUMÉ

Cette méthode me paraît être idéale, car *l'anatomie dynamique* est la pierre angulaire de toute la médecine, non seulement parce qu'elle est la base sur laquelle s'appuient la physiologie et la pathologie mais aussi parce qu'elle permet à l'élève de développer son sens d'observation et d'acquérir une notion exacte des structures en trois dimensions; c'est ici que le toucher ajoute à la vue un élément indispensable à la compréhension vraie des choses; en effet, les philosophes sont d'accord pour admettre que, dans l'ordre de la perfection, le sens du toucher est bien supérieur au sens de la vue: la sensibilité tactile se montre fine et nuancée dans la perception de la forme, de la consistance, de la température, etc. des corps.

De plus, elle facilite les généralisations et la synthèse car les détails conduisent à la notion des organes et des systèmes. L'histologie en particulier facilite cette intégration de la structure et de la fonction car on ne peut pas faire de physiologie sans histologie et *vice versa*, d'autant plus que le siège le plus important de la recherche fondamentale est l'histo-chimie cellulaire. L'enseignement bénéficie, en tout premier lieu, de cette conception parce qu'elle unifie des matières qui par ailleurs ont tendance à être dissociées: embryologie, histologie, anthropologie. "L'anatomie dynamique est la meilleure tête de pont qui puisse aider à passer des matières de base à la clinique".—Normand L. Hoerr

SUMMARY

At Laval University a dynamic and integrated system of teaching of anatomy has been introduced. Whereas some aspects of anatomy such as neuroanatomy lend themselves admirably to the simultaneous teaching of bone structure, histology and physiology, others cannot be taught so conveniently in this manner. However, it is at least advisable to teach at one and the same time the gross anatomy, histology and embryology of a system.

At Laval, before beginning dissection, students are given the formal course of descriptive anatomy in which systems are described completely one after another; neurology is left to the end of the year. This course is completed by practical sessions with demonstrations, and students are taught surface anatomy and functional tests on the living subject. In general there is one hour of theoretical teaching and two hours of practical work, though the latter is being increased to three hours. The course is selective rather than encyclopædic; anatomy is not taught for itself, but in order to show the students how to study it and integrate it into the medical curriculum. Thus emphasis is always laid on clinical and research applications of anatomy. Visual aids are generously used—lantern slides, blackboard drawings, demonstrations on prepared subjects, artificial or natural. This integrated course is particularly suited to the Latin mind, with its natural bent towards synthesis.

In practical work, students are divided into groups of fifteen, each under the direction of a monitor and working together throughout the year. Monitors are recruited from hospital residents. Practical work consists of surface anatomy and dissection. On Monday, each student receives a copy of the week's program; in

each group, under the supervision of their tutor, the students work out on themselves and each other various surface markings with the aid of skin pencils, palpation, rulers and radiographs. Before this work, students are shown demonstrations on cadavers and dissections on living dogs.

Dissection is carried out every day for three months—two hours a day with four students to a table—and the entire cadaver is dissected. Surface anatomy is recapitulated during this course.

Each monitor and his fifteen students have a two-hour weekly seminar at which each student in turn demonstrates material before the rest. The monitor is careful at these seminars to introduce some applied anatomy. In order to improve the system, a questionnaire was addressed to a sample of the student body. Response was unanimous in favour of the system of surface anatomy and applied anatomy, and it was suggested that the standard of the seminars be raised.

The most important functions of the teacher are to help the students to perfect their mode of working and to implant in them a desire for study. Anatomy students are given advice on methods of study, reading methods and methods of practical work. Students are urged to get a general acquaintance with the subject before taking part in a course; they are then in a better position to supplement their superficial knowledge with a useful series of brief notes taken at lectures and demonstrations. As regards reading, it is suggested that the student first read the whole book through, that he underline what is important, and that he then read again all that is underlined. Notes taken by the student should be transferred to the margins of the pages, and the original notes scrapped.

Dissection should be preceded by full theoretical study and undertaken in pairs, one student reading the book and directing the operations of his colleague. Dissection is then shown to the monitor and finally reproduced in drawings. Daily study of material taught is necessary, with weekends used for revision.

The junior teaching staff are trained in three disciplines—anatomy, histology and embryology. They should also do some extra biology in their post-graduate study.

THE MEDICAL STUDENT—HIS BACKGROUND AND HIS PROBLEMS

J. S. THOMPSON, M.D.,*
Edmonton, Alta.

THE SOCIAL and economic backgrounds of 700 Alberta medical students were examined in a recent paper by the author.[1] In the present investigation much more detailed information was gathered about a smaller group of medical students, namely those in attendance at the University of Alberta in the 1956-1957 session.

Most of the information was gathered by the use of a questionnaire, although certain of the data were obtained from the records in the office of the Dean of Medicine. The questionnaire was fairly detailed and was so conducted that the information was given anonymously. While certain questions (e.g., those dealing with motivation for entering medicine) may have been answered by some students in a way which might have concealed part of the truth, it is felt that, in general, the student body attempted to answer fairly and that the results are valid when taken for the group as a whole. The author would therefore like to express his appreciation to the students who answered the questionnaire and to thank them for their time and patience. Without their co-operation this survey could not have been made.

The only evident error in their estimates was a somewhat elevated idea of their own standings in the class. The students were asked in which quarter of the class they usually stood. Surprisingly, hardly anyone admitted to standing in the bottom quarter and the class really divided itself into thirds; hence, in the discussions which follow, this is the division that must be used.

Of a total of 218 students registered in the faculty 204 turned in questionnaires, although certain questions, especially those dealing with family income, were not answered by all those who returned questionnaires.

The total number of students reporting compared to the total registered in each year is shown in Table I.

TABLE I.—PERCENTAGE OF STUDENTS REPORTING

Year	*Total returns*	*Total enrolled*
1	58	59
2	56	58
3	45	53
4	45	48

Thus it appears that only a negligible number of students failed to return the questionnaire and the results for all years should represent a valid cross-section of our classes.

The data available divide themselves naturally into two parts. The academic, social and financial backgrounds of our students form the first category and might be called simply the background, while the rest of the information covers many facets of the student's life.

BACKGROUND OF OUR STUDENTS

Social Background

In the previous paper it was noted that about twice the number of students that one would

*Executive Secretary, Faculty of Medicine, University of Alberta.

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expect on a population basis stated that their homes were in Edmonton. It now appears that almost half (53 out of 107) of those who gave their homes as Edmonton moved here after they started university or moved here when they knew they were going to go to university. This means that, on the basis of those who were citizens of Edmonton before they started university, Edmonton is represented fairly on a population basis in our enrolment.

It would appear then, on the basis of this knowledge combined with that gathered previously for our much larger sample, that our students represent the urban and rural populations of this province very fairly and that the location of a person's home really has no bearing at all on whether or not he becomes a medical student.

As previously reported, the students come from homes in which the parents represent all the different categories of employment listed by the income tax office. This survey simply confirms the fact that the employee class is fairly represented in our student body, that only half the expected number of students come from farm homes, and that twice the number expected, on a population basis alone, come from the professional and managerial class.

For the first time in many years our first-year class is made up entirely of Alberta students. This is simply a reflection of the dearth of good applicants for medical school being felt all over North America at the present time.

Financial Background

The financial difficulties inherent in getting a medical education are often given as the main reason that more first-rate students do not try to become doctors. It is certainly true that the financial outlay is considerable, but as noted in the previous paper about two-thirds of our students come from what would be expected to be medium or low income homes.

More specific details have now been obtained about the income of the parents of 141 of our students. The remaining 63 students did not supply this information. However, those that did supply it come from what would appear to be homes of all income brackets, so that the 141 who answered are a fairly representative group. Table II shows the results of this survey.

TABLE II.—INCOME OF PARENTS OF STUDENTS

Parents' income	*No. of students reporting*	*% of those reporting*
Less than $2000	16	11.3
$2000 - 3500	37	26.2
3500 - 5000	33	23.5
Over $5000	55	39.0
	141	100

The average personal income figure for 1956 as reported by the Statistical Department of the Provincial Government of Alberta is $5082. While this may not exactly represent the average income for an Alberta family, it is a very close approximation and is the only figure available. From Table II it will be seen that 61% of our students come from homes where the income is at or below the Alberta average.

The cost of medical education and how our pupils deal with this problem will be dealt with in the section on the student himself.

Academic Background

The basic requirements for entrance into the University of Alberta Medical Faculty are two full university years beyond senior matriculation, with an average of at least 65% and four basic subjects (organic and inorganic chemistry, physics and zoology). Admission is based largely on academic achievement, and Fig. 1 shows a surprising degree of correlation between academic standing on admission and success in medical school. It has been the policy to admit students who have required an extra year to make up their average and this group is shown in the column entitled "best two years—65%". Some students may occasionally be admitted with an average of less than 65% but the number is very small and usually the student has done well on the last year before admission.

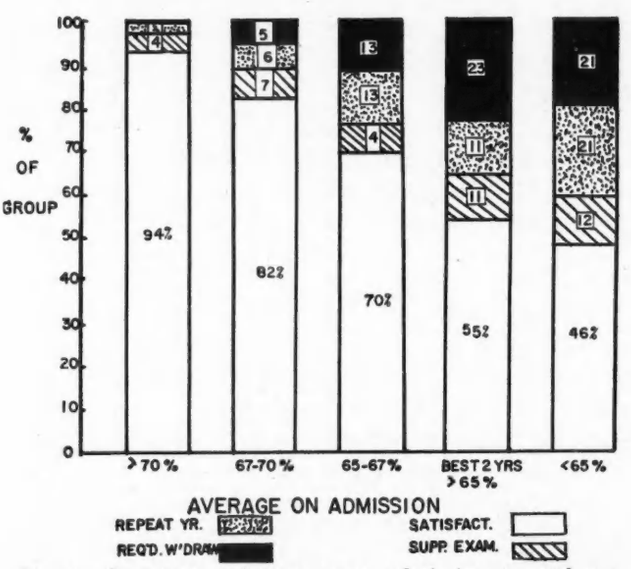

Fig. 1.—Correlation of average on admission to performance in medicine (for 520 University of Alberta students).

However, it is clear that only about 50% of the students in these two groups will have complete success in their courses. Whether or not we are justified in admitting these students on the basis of a predicted 50% successful performance is debatable. However, up to the present when places are available these students have been admitted.

The fact that we have the problem of whether or not to admit students with low averages is again a reflection of the national problem that too few well-qualified students are interested in a medical career. This trend has been getting more marked

for the past several years but at last appears to be levelling off. It is to be hoped that in the near future more well-qualified applicants for medical school will be found.

Motivation

Motivation is admittedy a very difficult force to determine. Our students were asked the following question: "Can you give your motivation for entering medicine (be honest—we don't know who you are)?"

Only seven of the 204 who returned the questionnaires did not attempt to answer. Several students gave more than one reason but, by and large, the reasons broke down into three categories: (a) 55% of students entered at least partly for the interest provided by the subjects and interest in life as a doctor; (b) 42% noted some form of service to their fellows as a factor in their decisions and 5 (2.5%) of these mentioned their intentions to be medical missionaries; (c) 39% admitted that social prestige and economic security entered into their decisions. Only a few mentioned the independence a doctor is supposed to have as a factor in making up their minds.

It is enlightening to read, verbatim, some of the answers. A very common answer was some variation of "to fulfil a childhood ambition to become a doctor". One frankly stated "money and social prestige" as his sole reason for entering. Other answers were:

> "Motivation must be subconscious. Actually I feel medicine is a poor investment in our economy."
>
> "I have a strong desire to be a doctor. What it is, where it came from, and how long it will last I do not know."
>
> "It is difficult to look at your own motives objectively; however, I believe them to be a strong interest in medicine and a desire to be of service in the community."
>
> "Perhaps I can accomplish something worthwhile for society. Monetary gain is not an ulterior motive since I would probably earn as much in another profession."

An example of rather negative motivation is the following:

> " . . . Secondly the standard of mathematics was considerably lowered in high schools during the last few years. Although my mathematical ability was very good, the lowering of standards in high schools influenced me against entering a field of study involving an extensive use of mathematics."

To determine why more students of high scholastic ability do not apply for medicine the question was asked, "Do you know anyone who debated entering medicine and then decided not to apply? How many do you know of?" The reasons for not applying were then asked. A breakdown of the replies is given in Table III. While there will be a certain degree of overlapping in the people referred to, the relative proportions are probably significant.

TABLE III.
REASONS FOR NOT APPLYING TO ENTER MEDICINE

Reason prospective students did not apply	*Number of prospective students*
Poor academic record	130
Financial	123
Length of course	86
Rewards not worth the money and effort	51

Apparently, then, the financial burden of getting through medical school is not the sole reason why students fail to apply, even if their academic records are good enough. The length of course combined with the feeling that the money and effort can be spent better in other fields are at least as important as straight financial problems.

One final point should be brought forward before leaving the question of the backgrounds of our students. Of those answering 25% stated that if the University of Alberta had no medical faculty they could not have become doctors. The reason given is invariably financial, and the students giving it are fairly uniformly distributed in the class on an academic basis.

THE STUDENT HIMSELF

Once a student has been admitted to the Medical Faculty, he faces a variety of problems and develops different ways of combating them. The following paragraphs attempt to present a comprehensive picture of the medical student.

Financial Problems

All of our students are confronted with the high cost of medical education and deal with it in many ways, although 21% report that financial problems may interfere with the scheduled completion of their course.

The cost of medical education is high and fees make up a large percentage of the costs in any year. Table IV shows the estimated expenses of our students for a year, without fees which will add from $350 to $550 per year to the over-all expense.

TABLE IV.—THE COST OF MEDICAL EDUCATION
(without fees)

Estimated cost per year	*Number of students reporting*
Less than $800	44 (29 of these have free room and board)
$800 - $1000	50 (2 of these have free room and board)
Over $1000	105 (52 of these are married)

Thus an unmarried student who must pay for room and board must generally expect to spend between $800 and $1000 for all expenses (exclusive of tuition) in an academic year, although by careful management at least 15 manage to get by with less than $800. It should be noted that at the University of Alberta students do not have to purchase microscopes, since these are provided by the university.

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Sources of Student Revenue

The student gets his income from a great variety of sources. Table V lists the chief source of income and the number of students reporting this.

TABLE V.—SOURCES OF STUDENT INCOME

Chief source of income	*Number of students reporting*	*Percentage of students reporting this*
Summer work	127	63%
Assistance from parents	34	17%
Income of wife	31	15%
Self and parents equal	6	3%
Other	4	2%

Of these 202 students, 23 are putting themselves through medical school unassisted by other sources except minor scholarships. Nine others are doing the same with the aid of some loans or grants from the funds provided by the Students Assistance Act of the Province of Alberta. Thus 32 (16%) of our students are completely independent except for some government aid in a few cases.

Some 30% (61) of our students must work in the term to help finance their education. Of these, 46 take their earnings in cash and only 15 take at least part of their remuneration as room and board. This latter group is largely doing clerking in hospitals in return for room and board.

Twenty-five (13%) of our students have received aid in the form of loans or grants under the Students Assistance Act of Alberta during the past year and this aid totals over $9000.

It is of interest to note that only one-quarter of those who work during the term feel that this seriously interferes with their academic standing. Most of those doing this type of work stand in the middle third of the class.

Apparently fear of going into debt does not deter students from entering the Medical Faculty, for 66% of our students estimate that they will be in debt by the time they graduate. The amount of this indebtedness will run from a few hundred to several thousand dollars.

One case in particular deserves attention. It is that of a student with a wife and one child who estimates his expenses at $2225 for the year. He earned $1500 by himself and received a scholarship for $100. He obtained a loan of $400 from the Students Assistance Act and a special loan of $200 from the University. Because the case is rather unusual, I can guess the identity of this student, and I can further state that the province's share of the expense is very well invested.

Marriage

With advancing age it is natural to assume that more students will get married, but it may come as a surprise to learn that in the third and fourth years almost one-half of our students are married. Table VI shows the number and percentage of married students in each year.

TABLE VI.—MARRIED STUDENTS

Year of course	*No. of students in year reporting*	*No. married*	*% married*
1	58	4	7%
2	56	11	20%
3	45	22	49%
4	45	20	45%

Of the total of 57 married students 21 (or 37%) have children, with families ranging in size from 1 to 4 children. The distribution of families by year of medical school in which the father is at present registered shows no outstanding trend. Apparently, then, students in higher years tend to get married in greater numbers than in the lower years but, once married, the expectancy of having families bears no relationship to the number of years of academic life a student still has before him.

Those who do get married apparently do not come predominantly from families with higher incomes or from any one group of the population. In fact, an analysis of the family background of the married students provides a good cross-section of the family backgrounds of our student body as a whole.

As mentioned before, 31 of these 57 married students get the major share of their incomes from the earnings of their wives, even though 7 of these have children to look after.

Usually (in 15 out of 21 families) the wife looks after the children and in two of these she also somehow manages to earn the greatest share of the family income, one by doing night nursing duty when her husband is home from classes and can baby-sit and study. In the remaining families a relative or baby-sitter looks after the children while the wife works.

Of all the married students, whether with children or not, only 4 (7%) get the major share of their incomes from their parents. The rest get the majority of their incomes from their own earnings or those of their wives.

It is of further interest to note that only 23% of the married students must work during the term, compared to 30% of the student body as a whole. Thus marriage does not seem, per se, to necessitate this added obstacle to success. In fact, of all married students 25% feel their grades suffer because of lack of work as compared to 26% for the class as a whole. Apparently the added responsibilities of marriage cannot be blamed for poor class standing since almost one-half of the married students stand in the middle third of the class.

The effect of the various problems that beset married students, upon both husbands and wives, is a source of worry to many psychologists, but at this university we have no direct evidence of serious domestic difficulties attributable to the fact that the husband is a medical student. However, there is little doubt that family responsibilities

curtail (or entirely prevent) many promising post-graduate careers.

Student Worries

When a student has academic difficulties, one of the first explanations that come to mind is that of worries concerning himself or his family. In order to determine the prevalence of these problems, each student was asked if he had any worries (apart from academic) that might prevent him from graduating. Over half (57%) reported no such worries, 21% have financial worries, 13% have personal problems and the remaining 9% have worries about their health. It is noteworthy that only one of our students reported that he felt his teachers discriminated against him.

It is distressing to discover that 7% of all our students have worries about their mental stability. It may be that this is simply a manifestation of "medical student disease" (it is well known that many medical students fancy that they have one or more of the diseases they see in their patients), but if this is not the explanation, it should be a cause of grave concern to us all.

Several students mentioned that they had several different worries but the majority named only one.

Those reporting financial worries rather surprisingly come fairly evenly from homes in all financial categories. There is a slightly higher number in the lowest income families but the difference would hardly be significant. Students in this category come from families in all the different categories of employment, again in apparently representative numbers. Of the married students 30% report financial troubles, indicating that this group has only a normal amount of money trouble. Also only 32% of those who work during term have major financial worries.

In fact, there does not appear to be any criterion by which one could pick out a student who might expect to have financial troubles before he graduates.

Academic Difficulties

As was mentioned in the earlier part of this paper, those who come to us with poor academic records can expect some trouble in their medical course. Of 38 students who have failed a year in the past 12 years and have had to repeat this year two have subsequently been required to withdraw from the course. Two others have failed a subsequent year but finally obtained their degrees.

Of those who failed a year 21 have now successfully obtained their M.D. Five others are still enrolled and their progress is satisfactory. Four students who failed a year are still just borderline and 6 have still to repeat the year they failed.

Of the 21 students who obtained their M.D. after failing a year, 5 have had some trouble with the Licentiate of the Medical Council of Canada examinations but will probably achieve the licentiate after a supplemental examination.

Transportation

An amazingly high percentage of students report that they own a car or have the use of one when needed. Of first-year students 19% have a car and the incidence increases until by fourth year 47% of the students have one. This should make the problem of transportation to distant hospitals a simple matter if the students are willing to co-operate.

SUMMARY

The picture of a medical student that emerges from the foregoing study is somewhat as follows:

He is from an average family that may live in any part of the province. He earns the majority of his expenses himself but finds that he will be in debt by the time he graduates. If he comes to medical school with an academic average of 70% or greater in his pre-medical work, he should have little trouble in passing all his courses satisfactorily, but if his average is below this figure he may have some difficulty. He became a medical student because he was interested in the work, but is glad it will give him community standing and a chance to serve his fellow man.

There is an even chance that he will be married before he graduates, and one-third of those who marry will have children before graduation. He will likely own a car before he graduates.

If he fails a year or a subject but is allowed by the faculty to repeat the year or take a supplemental examination, he will probably eventually graduate although he may have further academic difficulty before he reaches his goal.

Unfortunately, at the present time, too few of the friends he knew in his premedical years apply for admission to medical school, and as a result medical schools in all parts of Canada and the United States are not getting the number of applications from good students that they would like to receive. This means that we must take students who barely meet our minimum requirements and who will, in many instances, have such a poor record in medical school that they may be required to repeat portions of their course or may even be required to withdraw from the faculty.

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WRITTEN OR SPOKEN?

Of considerable value to an audience is the preliminary decision whether you will write to a subject or speak to an audience. They are quite different tasks. Scientific papers written to a subject make poor material to read to most audiences. Conversely, many an apposite and useful speech fits only the time and the place and never lives thereafter.—Alan Gregg: *For Future Doctors*. The University of Chicago Press and the University of Toronto Press, 1957.

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PARTICIPATION AND LEARNING IN MEDICAL SCHOOL

by a Fourth-year Medical Student

THE STUDENT fulminates with critical energy when it comes to medical education. Let us say that this represents his wish to become as good a physician as possible and his intense desire to make learning easier (than it actually is). The following paragraphs are written with these goals in mind and from the point of view of the student's experiences. First, though, let us mention some of the notions about medical education which are being currently discussed.

PARTICIPATION IN MEDICAL EDUCATION*

This phrase implies active intellectual and emotional experience in basic sciences, clinical medicine, and in the social atmosphere of the profession. It is assumed that participation in the fullest sense catalyzes learning. Prerequisite to this is an alert and active student and he must be treated as such rather than as a passive receptacle for prescribed facts. "Emotional interest" in the subject matter and a critical attitude are required if the student is to become able to think freely in medical terms. If this orientation is acquired, the student will continue to learn after leaving medical school.[13]

This at once indicates the efficacy of a teaching technique which gives the student adequate time to work and think on his own. The number of lectures can be restricted and reserved for presenting difficult concepts, special approaches to thinking about problems, and for data not well presented in the texts. Here the lecturer is able to contribute his own experience as scientist or clinician and to use his skill as a teacher instead of acting as a verbal textbook. Seminars with prescribed reading can be substituted for the latter type of teaching.

This view puts the emphasis on learning rather than knowledge, and is important today because total coverage is impossible. Learning must continue after school but, because it is necessary to absorb a great many facts in order to be a safe graduate, students tend to sacrifice depth of understanding for breadth of knowledge. It is important to experience the feeling of depth of knowledge, and this can be learned in medical school from intensive library or experimental research in a very limited field. That one has become an authority on a minute topic gives an important feeling of confidence. In addition, one experiences the difficulty of doing research and assessing results, and then one acquires the courage to doubt statements by recognized authorities.[2] These techniques give a first-hand acquaintance with problems of medical knowledge. At the clinical level, out-patient work and preceptorships are teaching techniques which aim to give the same intimate familiarity with problems of clinical medicine.

Our theme, then, is that participation means mobilization of mind and catalyzation of motives for learning more thoroughly and more efficiently. What does the student experience in the absence of adequate participation?

SOME FEATURES OF LEARNING MEDICINE

One is first presented with anatomy, which has to be learned like the catechism. It would be interesting to investigate the effect of this distressing experience on students' attitudes to medicine as a way of life. The old approach to anatomy (anatomy for anatomy's sake) may have acted in the past to prepare students for the acceptance of clinical medicine as a dogmatic discipline, a discipline which depended to such a great extent on the traditional wisdom and aphorisms of the great clinicians. Medicine, of course, has changed both scientifically and socially, but such change is not an all-or-none phenomenon.

Inevitably (and often luckily), elements of the old lag behind and are mingled with the new; now I refer specifically to the dogmatic presentation of classifications. The finality of this method of teaching would make one think that the natural divine order of things had already been discovered while, in fact, almost any classification is based on one of a dozen arbitrary criteria. If one is not aware of this and fails to understand why a particular classification is used, one's thought processes are stultified. They are hidebound in rigid compartments. Classification is essential and it gives a great sense of security, but if one is unable to think in terms of natural phenomena one will have a paucity of new ideas and a poor appreciation of what is not known. To discuss methods of classification may be very academic, but to do this is to sensitize the student to the climate of ideas in a field. This can be exciting and can stimulate thought.

Thinking in static categories can hamper clinical thought as well. It is said that we now know enough to be able to approach the patient with a view to evaluating those processes going on in and around him, and to draw from these considerations implications for total management.[2] Good clinicians clearly follow this approach but somehow certain students fail to grasp it and continue to rely on the pigeon-hole method. It is apt to be the same people who fail to sense the necessity of humaneness in the doctor-patient relationship and its value as a therapeutic tool. This is the ultimate manifes-

*This was the topic of the panel discussion sponsored by the 21st annual conference of the Canadian Association of Medical Students and Internes. It was felt that if student criticism were directed to a matter with which students are so intimately concerned, truly valid criticisms might be evoked. The panel was composed of Dr. R. R. Struthers, then Secretary of the Curriculum Committee, McGill University Faculty of Medicine, Dr. A. S. V. Burgen, Professor of Physiology at McGill, and Dr. T. J. Quintin, physician to the Sherbrooke Hospital and past president, Quebec Division of the C.M.A. Some of their remarks are included and are gratefully acknowledged.

tation of that pathological process which causes the impairment of mind and feeling.

At the First World Conference on Medical Education it was stated that "there is a poverty of mind in the finished medical and science graduate because of a lack of general education . . . [he] must understand the world in which the patient lives . . . Human ecology, the study of man in relation to his environment, continues to be one of the great current challenges in medical education if physicians are to have the perspective needed in their work today".[6]

There may be little room in the medical curriculum for courses in the humanities, but there is scheduled contact with many human beings in the clinical years. I suggest that the patient population is well equipped to broaden the student by virtue of its collective wealth of experience. While it might be absurd to spend hours listening to a syphilitic mariner spin a yarn about the quaint customs of women in distant lands, it is essential today that the doctor listen to the new Canadian, for example, who tells of his problems in this land and particularly of how the values prevalent in his old milieu jibe with those he has to accept now. Much about society and people can be learned from people, and it may be that the broadened awareness and consideration which is the harvest of a liberal education can at least be augmented by talking with patients.

It takes much experience to learn how to deal with patients kindly and effectively, but the skilful interviewer is sensitive to the person and can appreciate his needs and expectations. The role of the modern physician with his patient may ideally be one of "scientific adviser", and the relationship may ideally be one of "honest and candid interchange . . . now that magic is not necessary",[2] but study has shown that probably only the most sophisticated patient can appreciate these refinements. It has been shown[7] that the type of support the patient needs from his doctor varies greatly according to the socio-economic class to which he belongs. Professional and executive people want an honest and candid interchange, are aware that mistakes can be made, like to have a second opinion, and doubt the inner certainty of the physician who presents an assured attitude. In contrast, lower middle class patients (clerks, proprietors, white-collar workers, etc.) are most concerned about the type of personal relationship with the doctor. They are scared of intimate questions and examinations and want the doctor to be dignified and remote and to exude confidence. Manual workers, on the other hand, are more inclined to be critical, particularly if the doctor is too casual and doesn't give his undivided attention. They want a confidant. They easily become suspicious of the doctor's ability and are just as apt to take the opinion of a pharmacist.

These are a few of the differences discovered, and though they must vary somewhat by region and amongst individuals, most students are ignorant of such things and of how to handle the varieties of apprehensiveness. Equally important is the ability to manage difficult individuals—patients who are either hostile or overdependent, or hypochondriacal, or very anxious, or overconfident. This may take a long time to learn, but the first step is to identify such types as these, to think about the problems, or to discuss them with the tutor. The student may experience, and should be told, that a single stereotyped manner will not give support to all patients though it may defend the doctor against his own uncertainty.[5]

In practical terms now, how can the student become sensitive to these general problems of management and, in fact, learn about the environment from the patient? In short, how can he learn to interview? It is possible to teach something about interviewing by formal methods and perhaps the best way is by demonstration with the one-way screen followed by discussion. This would be a stimulating experience for the first-year student and a reminder that his ultimate task is to deal with living people. Even more simply, one specific technique can be taught. After inquiring about the present illness, it is fitting to ask how the condition is affecting the patient's life at the present time. This is a good spearhead to five or ten minutes of unstructured interview. It is here that one uncovers the problems of general management and also shares some of an individual's life experience.

The above presentation may sound as though there is great dissatisfaction about the items mentioned. Resignation or complacency is more often the rule because many students overcome the inadequacies of their training as a result of their own insight and the enlightened approach of a few teachers, and the others are unaware of what they have missed. In any case, the above difficulties need not dictate drastic changes. But I seriously question whether problems such as those we have discussed—the problems of intellectual participation and of interpersonal participation—can be solved by curriculum revision alone.

It might be revealing to attempt to localize these problems in an aspect of medical education about which little is understood, i.e., how the individual is transformed to the extent that he becomes a member of the profession. Much of what goes on here is incidental learning; very little is intentional. Although the following analysis is crude and sketchy, it is attempted because it has been infrequently tried.[11]

LEARNING TO BELONG

Let us take a glimpse at the process of maturation of the student in becoming a member of the profession. This is part of one's education because becoming a doctor involves developing an image of oneself as a doctor. It is interesting to watch this

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process in oneself and one's classmates over a period of four years. The most conspicuous feature of the first-year class is the anonymity of its members. Slowly the amorphous and sometimes raucous group organizes itself out into recognizable personalities, and much later into puppet hierarchies having little to do with authority but based on some vague notion of prestige.[3] In the final year, most individuals are ready to declare their serious intentions in life. Certain symbols of acceptance have become theirs and a rudimentary professional group has formed. An amalgam of personality, prestige rating and occupational choice has emerged as a personal professional identity to others, and a professional self-image to oneself. The development of such a self-image must have much to do with the maturation of one's relationships with patients, and with the desire to learn. It is known that this process is accelerated by participation in helping situations, i.e., by being given clinical responsibility.[11]

But some students never become part of the structured group and suffer from severe loneliness because of this isolation. This condition may be reflected in a more vital aspect of acquiring membership which can be defined as the degree of proximity of an individual to the "inner core" of the profession.[8] This is a group of highly respected specialists which has specific functions regarding the organization of the profession and the acceptance of members in the various hierarchical stages. Consequently, a set of adjustments to this group and standards mantained by it are required throughout the course of an urban medical career. Prerequisite to these adjustments, though, is the perception of the standards and the organization which exists. Because much of this is very informal and not readily available in brochures, for example, students are apt to be confused by it. They vary in their perceptiveness in this regard, and in their readiness to accept what they perceive. They may think that there are accepted ways of doing things and thinking about things which are irrational. Relationships between members of the hospital staff may seem to be deprived of normal spontaneity and to be governed by an unknown set of norms. Students are required to do work at times which seems to have no intrinsic value. In other words, a student may see this induction period as one having certain characteristics of an initiation in that there are unnecessary hardships and obligatory rituals. This can aggravate the feeling of isolation of the student, who cannot rely on the security of complete acceptance in any group.

In addition, the neophyte is apt to become excessively status-conscious in the early stages of knowing the profession. The first awareness of status in medicine is that of the relative reputation of various medical schools, then of hospitals, then of subtle gradations within hospitals, and the individual realizes, at least semi-consciously, that the status of the institutions with which he is associated becomes a feature of his own status. His own place in such an elaborate system is enigmatic to him, and what is unfortunate about this is the lack of complete knowledge of the *different* types of socially defined success in medicine,[9] and, on the other hand, different opportunities for *self-fulfilment* in different types of careers. (This is one reason why preceptorships are so important.) At any rate it seems unnecessary that students should be left floundering trying to discern the nature of the profession as a social system when much anguish could be avoided by taking this aspect of medical education out of the realm of incidental learning and making it intentional learning. This could be achieved most easily by formal lectures and perhaps most effectively by closer staff-student communication.

INTEGRATION

Now we have asserted that learning the doctor's role, with patients and with colleagues, may be accelerated and augmented: (1) by giving the student clinical responsibility (making him play the role of the doctor by giving him specific duties), and (2) by attempting to minimize the inevitable antithesis and misunderstanding on the part of those who are only partly accepted towards those who hold the controls. It may be that much of the complaining about medical education is an expression of this antithesis. The malignancy of this phenomenon can be prevented by making facilities for complaint available in the medical school. Any form of organization which permits free communication between staff and students will serve this function, and very many others as well. (This does work well at one school at least.[1]) One suggestion is that the opinions of more mature students could be evoked by forming a board composed of students and recent graduates which would function as a source of constant stimulation for medical school authorities.* The humility which the graduate of a few years may develop towards problems of medical education might be comforting to the teachers.[12]

We have talked of the meaning of intellectual participation; how the student can be directed toward this; and how this in turn can kindle his initiative to learn and can sharpen his critical abilities. We have talked of the meaning of interpersonal participation, and how this can make one aware of patients as people, and how students and doctors can slowly enrich themselves by sharing experiences about which patients will speak. We

*An attempt to institute staff-student committees is one of the current projects of the Canadian Association of Medical Students and Internes. The organization also hopes to facilitate postgraduate training by helping to gain adequate salaries for interns. The urgency of this matter at the present is that, if hospitals are to be financed by the Government in the future, the matter of interns' salaries should be entered in budgets before the change is made. It is also felt that if interns' salaries are raised, hospitals will have to compete with each other in terms of the calibre of experience and training offered rather than in material attractions.

have touched on the problem of the feeling of belonging—of the clinical value of development of a professional self-image; and of the value of clear-sightedness with regard to the kind of life one can lead, as furnished by a clear understanding of the nature of the profession.

I cannot offer an apocalyptic conclusion. But if the problems and theories I have discussed have one element in common, it is that the development of more effective physicians depends on unfettering the shackles which prevent free communication between those who teach and those who learn. Perhaps this is to demand too much time from the teacher's practice or research. But if the preclinical student were nearly as close to the instructor as, say, the Oxford student can be to his tutor, and if the clinical student were nearly as close to the clinician as the apprentice can be to his master, perhaps many of these problems would disappear.

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TEACHING NUCLEAR MEDICINE

JOSEPH STERNBERG, M.D.,*
Montreal

I. Definition of Nuclear Medicine

THE DEVELOPMENT of radioisotope procedures in medical and biological disciplines is almost a unique phenomenon in the history of medical science, even in our period of rapid progress. It was only in 1946 that the first announcement of the availability of radioisotopes was published in *Science;* the first shipment was made one month later. By the end of December 1954, the Atomic Energy Commission of the United States had distributed 64,202 shipments, with a total activity of 54,728 curies, the equivalent of 55 kg. of radium. The 2416 radioisotope users listed in 1955 in the United States were divided as follows:

Medical institutions	870
Universities	212
Industrial laboratories	1020
Federal laboratories	237
Foundations	53
Others	24

Since 1955, the date of the last official report of the U.S. Atomic Energy Commission, the number of isotopes distributed as well as that of the users has shown the same steady increase. The same situation is found in Canada, and the high quality of the Cobalt 60 produced at Chalk River is an important factor in the continuous increase of the Canadian shipments of isotopes in this country as well as abroad.

This remarkable new tool for diagnosis and treatment is not applicable merely to a limited field of medicine, such as x-ray machines for radiologists or bacteriological procedures for microbiologists. Indeed, the diversity of use is stressed by an examination of the list of applications, as presented in the U.S. Atomic Energy Commission report previously mentioned:

Use	*Isotopes*					*Licences*
Thyroid function—diagnosis	I^{131}					80
Blood volume and circulation studies	I^{131}	Cr^{51}	P^{32}			291
Cardiac output, life span of RBC	I^{131}	Cr^{51}				80
Other diagnostic uses (liver, etc.)	I^{131}	Cr^{51}	etc.			156
Tumour diagnosis (brain, liver)	I^{131}		P^{32}			186
Treatment—						
hyperthyroidism	I^{131}					431
heart disorders	I^{131}					230
thyroid cancer	I^{131}					295
other cancers	I^{131}	P^{32}	Au^{198}	Co^{60}	Cs^{133}	1027
topical application		Sr^{90}				232

It can be seen that the same radioisotope (I^{131}) can be used for diagnosis in endocrinology, for static and dynamic tests in cardiology, for tumour detection, for test of kidney and liver function, for specific and non-specific treatments. This constantly increasing field of application requires special knowledge which will permit selection of an isotope suitable for the chosen problem: a knowledge of the physical qualities of the radiation carrier, of the chemical properties of the isotope, of its biological role and especially of its metabolic pathway in the body. All these data are usually acquired by the physician during his medical studies, but under various disciplines, such as biophysics and biochemistry, physiology, radiology, therapy, etc. Almost invariably, the emphasis is laid upon a point other than that specifically required for the application of radioisotopes, and a great number of facts pertinent to this application are not even included in the medical curriculum,

*Head, Clinical Research Department, Montreal Institute of Cardiology; Head, Radioisotope Unit, Institute of Microbiology and Hygiene, University of Montreal.

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as there is usually a delay between the acquisition of new facts and their dissemination to medical students. These considerations, as well as the need of training personnel in safe handling of radioactive material, led to the establishment of courses for the prospective users of labelled elements. In January 1948, the United States Atomic Energy Commission started the first training course at Oak Ridge, Tennessee. The relatively small number of radioisotope users in Canada scattered over a wide territory did not allow a training course in the same manner as in the other countries; nevertheless, a considerable number of physicians and biologists have been trained at Chalk River or in the laboratories of the National Research Council.

The universities or hospitals using radioisotopes have taken the initiative in establishing courses, on a more or less formal or complete scale; however, each training period is destined to fulfil the special needs of the users: safe handling, therapy, diagnosis, and autography. Some of the training courses have been integrated in postgraduate studies; other courses do not have any academic status, being offered by hospitals or other medical institutions. In the United States, there were in 1954 approximately a dozen courses, in addition to the training course at Oak Ridge. Most of the courses are established in the great medical centres in New York, Boston, Philadelphia, Los Angeles, etc. In Canada, a training course in the biological and medical use of radioisotopes was started in 1953-54 in the Department of University Extension of McGill University; this is a postgraduate course in basic ideas, open to medical or non-medical graduates interested in the use of radioactive isotopes. Various departments offer training periods to their members in the special use of radioisotopes as employed in the department concerned: therapy, autography, etc.

Thus, the need of a training period in nuclear medicine is universally recognized, but the mode of presentation varies greatly with the personality of the teacher, his own training and, above all, the attitude of the parent institution towards this new discipline. It seems that the core of the problem lies in the ambiguity of nuclear medicine itself: is nuclear medicine a new medical subspecialty in formation, comparable to virology or other new medical branches, or is the common link between the "isotopologists" merely the use of a new tool, which, however refined and diversified, offers the same limited value as chromatographic or electrophoretic techniques? The answer to this question is difficult to give at present, but in my opinion, nuclear medicine implies much more than the use of a tool: whereas chromatography and electrophoresis remain strictly limited to biochemistry and are used for the completion of the diagnostic armamentarium, the radioisotopes have the protean application outlined above. But the extent of utilization of a procedure is not a decisive factor in its integration as a new discipline. More important is whether or not it imposes a new concept in medicine. In that respect, nuclear medicine might safely be considered as introducing a modern concept in biology and medicine, characterized chiefly by the use of a tool—the radioactive isotope—but also by a highly dynamic view, which has already led to the establishment of new ideas or principles (turnover, metabolic pools). These ideas have now been incorporated into biochemistry or physiology, yet it must be remembered that they have been introduced only through the new vista opened by the isotopes.

This manner of thinking seems to be in accordance with the point of view of the authorities licensing the use of radioisotopes. Indeed, every prospective user of radioisotopes in clinical medicine is obliged to have a training period which covers the basic ideas and the safe handling of the given isotope. This is not required in any other medical specialty, although the materials used, such as virulent microbes or infected tissues, are sometimes more dangerous than the radioactive substances. It might be argued that the special training required was instigated by the strong impact of official regulations, sometimes considered more of an obstacle than an incentive to the development of nuclear medicine. Nevertheless, the need of a training period for users of radioactive substances is accepted by everybody, even if its manner of presentation is debatable.

II. WHO SHOULD BE TRAINED IN NUCLEAR MEDICINE

Once this point is established, the question arises, who are the students who should be trained? Part of the answer has already been presented. This is neither the moment nor the place to advocate the introduction of nuclear medicine as a part of the regular medical curriculum. The boundaries of this new discipline are too hazy and we must first await a delimitation. Most of the basic concepts are taught in part in various fields, especially biochemistry and physiology, and many of the basic sciences have laboratory periods demonstrating the use of radioactive isotopes. Thus, the future generation of physicians will have a certain number of ideas which, even if insufficient, will form a foundation to which further information can be added.

The physician already engaged in general practice or in the exercise of a specialty other than radiology will be interested in radioisotopes only in a very limited way and he will direct patients to a colleague specially trained in this field, rather than devote a considerable amount of time to the acquisition of new and often highly technical notions of physics and chemistry. This delimits almost naturally the category of physicians who should be trained and who in fact answer with enthusiasm to the call of this new discipline: the

young physician, resident or intern, who is undergoing a training period in a specialty or for a postgraduate degree. The statistics of the last five years of fundamental training in nuclear medicine at McGill University give the following data:

TOTAL NUMBER OF STUDENTS BETWEEN 1954 AND 1958: 110

Age groups		*Degrees*		*Affiliations*	
below 20 years	—	M.D. (alone or + M.Sc., Ph.D., F.R.C.P.)	71%	University	51%
20 - 30 years	47%	Ph.D.	7%	Hospitals	38%
31 - 40 years	47%	M.Sc. or B.Sc. (graduate students)	22%	Government	3%
over 40 years	6%			Industry	5%
				Self-employed	3%
Language and origin		*Specialty*		*Purpose in taking the course*	
English-speaking Canadians	38%	Medicine, pædiatrics, etc.	41%	Degree (M.Sc., Ph.D.)	38%
French Canadians	36%	Surgery, gynæcology, obstetrics	19%	Certificate in medicine	19%
Others	26%	Radiology	7%	General information	37%
		Biochemistry, physiology	10%	Authorization from AEC	6%
		Teaching (Assistant Professor)	5%		
		Graduate students	18%		

Although the number taken for this analysis is small, some of the data are nevertheless suggestive, such as the fact that the mean age of the students is 31.5 years. This confirms the assumption that the most receptive element for new disciplines is the young physician who has almost completed his training and who wants to practise with the help of the newest methods offered by medical science. Examination of the specialties leads to some surprising findings. Although the majority of students are in the field of internal medicine, as one would have expected, it is interesting to note the considerable number of surgeons, either practising or engaged in postgraduate studies. On the other hand, the radiologists are in a minority, perhaps because they are compelled to study this subject more in detail during their specialization period. It must be said that the American Board of Radiologists has introduced a compulsory examination in nuclear medicine for 1960. Peculiar to the province of Quebec is the even proportion of French and English speaking Canadians who attend a course given in English. Most of the members of other nationalities are graduate students, among them a considerable number of Indian physicians and biologists.

Analysis of the purpose of students in seeking training in nuclear medicine leads at first to paradoxical findings. The majority would be expected among those who contemplate immediate use of radioisotopes and therefore attend a basic training course in order to satisfy official requirements. However, this category is the smallest (6%) of the analyzed population, in contrast to 37% and 38% of those who seek a general information-refresher course and those engaged in postgraduate studies. Perhaps the analysis of the affiliations of the students will explain the reason for this interest. Fifty-one per cent of the students are affiliated to a university and 38% to a hospital. The self-employed physician, who might be an important factor in the development of future refresher courses in nuclear medicine, constitutes but a small fraction (3%). For the time being, nuclear medicine is still a discipline linked to the great medical centres in Canada.

III. WHAT SHOULD BE TAUGHT IN NUCLEAR MEDICINE

The formulation of a topical outline for a training course in nuclear medicine is difficult, owing to the enormous field covered by a complete course, from nuclear physics to public health, from radiobiochemistry to therapy.

In the official recommendations made by the Atomic Energy Commission, a minimum of training is required for a physician who contemplates using radioisotopes for clinical purposes. The minimum clinical radioisotope experience considered sufficient by the Atomic Energy Commission is divided into the following parts:[3]

". . . *Basic radioisotope training* shall provide the physician a working knowledge of:

1. Principles and practices of radiological health safety.
2. Radioactivity measurement standardization and monitoring techniques and instruments.
3. Mathematics and calculations basic to the use and measurement of radioactivity.
4. Biological effects of radiation.
5. Actual use of radioisotopes in the types and quantities for which application is being made, or equivalent experience.

"The basic training should be completed by an active participation, obtained by collaborating in a program using radioisotopes in clinical situations comparable to those proposed by the applicant. The active participation consists of:

1. Evaluation of the suitability of the patient for radioisotope diagnosis and/or treatment, by taking patient histories and performing medical examination.
2. Collaboration in diagnosis and/or treatment and dosages prescribed.
3. Measurement of doses and their administration.
4. Related measurements and plotting of data.
5. Active period of training and experience of sufficient duration to permit the following of specific patients through treatment and post-treatment periods, including re-evaluation as to effectiveness and complications.
6. Studies of case histories . . ."

The prerequisites for use of radioisotopes in humans vary with the chosen isotope and with the contemplated purpose—diagnosis or therapy, but there is no variation in the initial part of basic training, which must be taken by every applicant. The period of active participation is usually 30 hours in an approved institution and includes active participation of the student in the handling of at least 10 patients. At the end of the training period, a statement of the preceptor, furnishing information concerning the physician's basic training and clinical experience in the use of radioisotopes, must be sent to the Isotope Extension Committee.

This is the procedure for an applicant intending to use radioisotopes in humans. In our analysis, this will cover only 6% of the total number of students of nuclear medicine who followed the training course in five years. The others intend to apply radioisotopes in animal research or in biochemical problems, for which the regulations of the Atomic Energy Commission are not as strict as in the first case. This leads to a somewhat paradoxical situation. The experimental use of radioisotopes in animals, very often the source of new diagnostic and therapeutic applications in humans, is open to everybody who has a laboratory fulfilling the regulations of the Atomic Energy Commission, but less emphasis is laid upon the basic training of the research worker. The result has been often a considerable waste of time and material for the untrained worker who is lured by the apparent simplicity and accuracy of radioisotope technique, without knowing its pitfalls and complexity.

The author does not advocate a compulsory training period for everybody who intends to use radioisotopes; it is understood that a conscientious worker will not apply a new technique without knowing how to use it. The difficulty lies in the lack of informative courses which give at first general basic training, followed by a review of the applications of radioactive isotopes in all the important fields of medicine and biology. Sometimes this review can be more important than the specific, prescription-like training required for the 30-hour training period, because it opens new horizons to the physician. I have had the pleasure of initiating and participating in various such projects started by physicians who had followed the training course at McGill University.

A complete course in nuclear medicine should cover the following fields:

1. A basic part (30-40 hours) dealing with the indispensable concepts in nuclear physics and radiochemistry, as well as an optional laboratory period in the same field.

2. A 60-70 hour period covering the review of the medical and biological applications of radioisotopes. This period does not include any practical clinical or laboratory experience.

3. Finally, the training period as required by the Atomic Energy Commission. Naturally, as the basic training has been acquired in the first part, the student will devote his time exclusively to the practical applications of the radioisotopes.

The advantage of a course divided into three definite parts is obvious: the student is free to follow the part he is interested in, without being obliged to attend the other periods. Thus, the biochemist or biologist who intends to use labelled elements on a small scale *in vitro* will benefit only from the first part and perhaps from some of the second period's lectures. On the other hand, the second part is destined for the physician who wants to keep pace with medical progress, without having an immediate intention of applying the methods. It is similar to the refresher course, but on a more elaborate scale. Obviously, the third part will be compulsory in obtaining authorization to use radioisotopes in humans.

Several training courses in the United States, such as that at the Postgraduate School of Medicine of the University of Texas, are conceived along these lines. This is a course in which part I, Radiological Physics, a two-month period restricted to residents in radiology, is followed by a month-long course in clinical use of radioisotopes, together with some of the informative lectures of the second part in our classification. The McGill course treats the first part more completely and covers only parts of the review, owing to the insufficient number of hours (50-60) per session.

A last point to be discussed is the problem of postgraduate studies in nuclear medicine. For the time being, there is no question of a degree in a field whose boundaries are still unsettled. The students who contemplate more specialized study along these lines should be oriented towards degrees in investigative medicine.

However, we foresee the day when a decision will be necessary in this matter, especially because of the recent impulse given to the formation of specialists. The Society of Nuclear Medicine, the official body of radioisotopes users in medicine, has taken the timely initiative of studying the problem of the teaching of nuclear medicine at its annual meeting in June 1958. The author has the honour of having been designated as the organizer of this panel. It is my sincere hope that the conclusions of this meeting will emphasize the increasing need for a comprehensive and unified teaching system of this young specialty, dynamic both in its concept and in its evolution.

A LIBERAL EDUCATION IN MEDICINE

". . . the need for a modern liberal education for doctors has never been greater, nor is it likely to lessen in the future. An understanding of the principles of science must supplement acquaintance with the liberal arts in equipping them even to take their place as responsible citizens; and such an education is the only one which will allow them a chance of accommodating themselves to the inevitable changes in medical practice."—D. Black, *J. M. Education*, 32: 751, 1958.

PROBLEMS OF POSTGRADUATE EDUCATION IN CANADA

C. J. TIDMARSH, M.D., *Montreal*

ALMOST every medical graduate looks back with mixed feelings to the fateful day when, after preliminary postgraduate training, he has to decide whether to go into general practice or to specialize. It is an important decision because for most it is irrevocable. Many decide to take up general practice for a year or two in order to gain experience, save money and then return to a medical centre for special training. Few ever do. Others, after years of special training, decide to give it up, but these also are few in number. At this turning point in his professional career the graduate gets very little help. Taking all the known factors into consideration, he makes his own decision for better or for worse. If he chooses to specialize, the road ahead is long and difficult. It leads to an almost impregnable fortress at the summit—the Royal College. For help and guidance en route he may decide to enrol in the five-year Diploma Course. The Diploma Course is available in only a few of the larger medical centres in Canada, but qualified graduates from any part of the country may enrol. When it was first offered, new universities were starting, older ones were expanding and there was a demand for well-trained men to fill posts in the medical faculties and teaching hospitals. Therefore, at the very outset of his career a graduate selected for a Diploma Course could almost be guaranteed that, at the end of five years, he could step into a university appointment with an assured future. Unfortunately this is no longer the case. Today the holder of a diploma may find that he is not yet considered to be fully qualified as a specialist. He still must carry on to specialist certification or to fellowship in the Royal College. This situation has caused many to feel that the time has come to take a long hard look at the Diploma Course, what it has to offer and how it can be made more advantageous.

One might reasonably presume that the course affords a period of excellent training for attaining fellowship. It is discouraging, however, to find that such a large number of diplomates, after all their years of work and sacrifice, fail to qualify. Where lies the fault? Are these men chosen with sufficient care? Is the Course adequate or are the standards of the Royal College too high? It is my purpose in this paper to examine only one of these questions, namely the question of Royal College standards.

We should be glad that we have a Royal College in Canada. Prior to its inception it was necessary to take a lengthy and expensive period of training in England before attempting examinations. We should be proud of the development and progress of our College, for throughout the years it has maintained the dignity and prestige of our profession. However, this pride and satisfaction need not prevent a pause from time to time to inquire whether the College could still further enhance its value.

Undoubtedly, too much emphasis is placed on the acquiring of fellowship. It seems to me indefensible that this should be considered an essential qualification for appointment to the staffs of our hospitals and universities. The need for some highly trained scientific men in these institutions is obvious. They do much of the administrative work, sit on innumerable committees, encourage research, give papers at medical conventions, do a lot of the teaching and generally try to build up the reputation of their institutions in the medical world. Their contact with sick people is often rather limited. There is an equal need for well-trained experienced clinicians. They may not have the photographic memories to help them pass examinations for fellowship or they may not even be interested in trying, but they have an intuitive ability which, combined with their training, makes them excellent clinicians and teachers. These are the men practising in the community that keep the private pavilions filled with patients, keep down the deficit, maintain the local reputation of their hospital and, when permitted, delight the students with a practical down-to-earth discussion of some common diagnostic problems. To deny such men staff appointments because they haven't a fellowship is a retrograde step which is bound to lower the level of clinical practice in our medical centres. The attending staff of every general hospital must reveal a cross-section of the profession in the community which it serves. Who knows where the next Banting may be?

The large annual casualty list has caused considerable criticism of the College examinations. In the written part the questions are of a general nature and the system of marking is beyond reproach. There remains the attitude of the examiners. It has always been a saying around the universities that easy questions are marked hard. It may be that our examiners are going out of their way to maintain extremely high standards, or it may be that from their vantage point of training plus years of experience they are expecting too much from candidates with training but little or no experience. The oral examinations are considered more difficult in some respects than the written. Some candidates lack the ability to think quickly and clearly when under nervous strain and do not therefore do justice to their knowledge. All seem to feel that to a certain extent success may depend on the mood of the examiners, their personal idiosyncrasies and perhaps some luck in the type of questions asked. For these reasons it is difficult to understand why a candidate who has passed the written and failed the oral should be required to do the whole thing over again the next time. This rule has worked untold hardship on candidates in time, money and

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mental strain, making the second attempt more hazardous. A change in this regulation would be a great help.

In making any criticism of the standards or procedures of the College examinations it must be clearly pointed out that the College bears no responsibility for the selection or training of the candidates, nor does it have anything to do with the emphasis placed on fellowship as a requirement for hospital or university appointments.

The College undertook certification at the request of the Canadian Medical Association. It is doubtful whether it has been completely successful. The examinations are not as difficult as those of the College, and recently candidates who have been close to College standards have been granted certification without further examination. The trouble seems to be that that is the end of it. There is no organization or society of certified specialists, no opportunity for progressive training, no satisfactory recognition. Many wonder why they ever bothered with it. To the College it is an administrative headache. It is gratifying to learn that the College has recently appointed a committee to study certification and make recommendations.

There is a possible solution to many of the above-mentioned difficulties, one which has been discussed with a number of fellows and considered worthy of careful study.

1. Institute a membership in the Royal College with qualifications on about the same level as certification. This should prove less burdensome to the College, would be financially very profitable and, by making its postgraduate facilities available to a large number, would be a definite contribution to Canadian medicine. It is sincerely to be hoped that membership instead of fellowship would qualify for posts on hospital and university staffs.

2. Hand over the certification of specialists to the medical governing bodies of the individual provinces. The province of Quebec already has its own system in operation. It should be simple for the other provinces to follow its example. It might happen eventually that membership would replace certification as a qualifying standard.

3. Continue examinations for fellowship at the present level. One cannot believe that the fellows would diminish materially in number because of membership. In fact, with time and experience added to membership, the number of successful candidates for fellowship should increase steadily.

1390 Sherbrooke St. West.

THE STATUS OF MEDICAL BACTERIOLOGY IN CANADA

A Brief Prepared by the Canadian Association of Medical Bacteriologists*

INTRODUCTION

GREAT CONCERN has been expressed by Canadian bacteriologists in recent months over the deplorable lack of recruitment of young medical graduates into this specialty. A meeting was called to take place in Toronto in December 1957, in order to discuss the problem of medical bacteriology and to suggest remedies to counteract the present situation.

This meeting was attended by 32 medically qualified bacteriologists from all parts of Canada and resulted in the formation of the Canadian Association of Medical Bacteriologists. This organization has since been approved and joined by a total of 73 of the 78 Canadian bacteriologists. The brief to follow has been agreed upon by the members of the C.A.M.B.

Throughout this brief *Bacteriology* is used in its broadest sense to include bacteriology, virology, mycology, parasitology, and immunology as defined in the requirements of the Royal College of Physicians and Surgeons of Canada for certification in this specialty.

We define a medically qualified bacteriologist as an individual who has graduated from an approved medical school and who also is certified in the specialty of bacteriology by the Royal College of Physicians and Surgeons of Canada or by a provincial certifying body, or who has had training and experience equivalent to that required by these bodies.

THE PROBLEM

There are in Canada at present 78 medically qualified bacteriologists of whom about half are actively engaged in the practice of clinical bacteriology and many of these have university teaching appointments as well. Because of lack of recruitment in Canada, 20 medical bacteriologists have been brought from Europe to fill essential positions since 1945. This source is now depleted and there are still not sufficient medical bacteriologists to cover adequately the new and rapidly developing field of virology or the badly neglected fields of mycology and parasitology. The demands to be made upon the specialty on the introduction of the Hospital and Diagnostic Services Act

*Steering Committee: Dr. P. H. Greey, Professor of Bacteriology, University of Toronto; Dr. R. D. Stuart, Professor of Bacteriology, University of Alberta; Dr. A. J. Rhodes, Director, School of Hygiene, University of Toronto; Dr. T. E. Roy, Bacteriologist, The Hospital for Sick Children, Toronto; Dr. J. C. Wilt, Professor of Bacteriology and Immunology, University of Manitoba; Dr. C. E. van Rooyen, Professor of Bacteriology, Dalhousie University; Dr. André Leduc (President, Association of Medical Bacteriologists of the Province of Quebec), Notre Dame Hospital, Montreal; and Dr. R. W. Reed (Secretary), Professor of Bacteriology and Immunology, McGill University.

(Bill 320) cannot be met by the present roster and certainly will not be met in the immediate future by young graduates now in training.

Canada now has about 60 hospitals with over 300 beds. At present, not even all of our teaching hospitals have medically qualified bacteriologists on their staffs. The constant challenge of new antibiotics and of the altered effectiveness of the older ones, rather than doing away with the need for medically qualified bacteriologists, on the contrary has made their services even more essential. The rapid development of virology and the eventual implementation of the Hospital and Diagnostic Services Act will accentuate the demand. Nevertheless, it is difficult to induce young medical graduates to enter this medical specialty where the needs and demands far exceed the physical capacity of the available workers.

The main reasons for this lack of recruitment are:

1. Medical bacteriology is probably the most poorly paid specialty in medicine.
2. The lack of established positions in our larger hospitals and public health departments, together with lack of adequate financial reward, has discouraged recruitment. There are not enough qualified persons in Canada for the few existing positions.
3. Adequate training grants have not been available.

ACTIVITIES OF THE MEDICALLY QUALIFIED BACTERIOLOGIST

A medically qualified bacteriologist may practise his specialty in one or more of four fields, i.e. clinical bacteriology, public health bacteriology, teaching and research. In all these fields, we feel that medical training is an essential supplement to formal training in bacteriology at the Ph.D. or diploma level. A medical background is necessary to deal properly with the many problems of infectious disease. Medically qualified bacteriologists feel that they constitute a specialist group in the practice of medicine serving a most important function which no other specialist group can perform effectively.

In most medical schools in Canada at present, an appointment as professor of bacteriology carries with it not only the responsibility for teaching undergraduate and postgraduate medical students, and for conducting and supervising research, but also direct responsibility for the clinical bacteriology of one or more teaching hospitals. There is very real concern that unless recruitment of young medical graduates of ability can be greatly improved, such positions will one day have to be filled by persons lacking the essential medical training and experience. We feel very strongly that only medically qualified bacteriologists can make an optimum contribution to the many responsibilities of these important appointments.

The major duties and responsibilities of a medically qualified bacteriologist in hospital practice are as follows:

1. To organize and administer the bacteriology laboratory service and take full professional and scientific responsibility for its operation.
2. To act as a specialist medical consultant to aid in the diagnosis, treatment, and prevention of disease.
3. To be jointly responsible for the control of hospital cross-infection and of hospital hygiene and sanitation.
4. To assist with formal and informal instruction of the hospital staff.

It is clear that the effective clinical bacteriologist is involved in both diagnosis and treatment of disease and also in a wide range of other hospital activities. It is equally clear that every hospital in order to function in the best interests of patients and staff alike should have the services, at least part-time, of a medically qualified bacteriologist to consult with the medical and administrative staff on the items mentioned above.

The duties and responsibilities of the medically qualified bacteriologist in the field of public health are no less diverse than those of his colleague in clinical bacteriology and include the diagnosis of infectious disease and especially its epidemiology on a community-wide basis, rather than on an institutional or individual basis.

RECOMMENDATIONS

The group of Canadian medically qualified bacteriologists who have discussed the problem of the specialty feel that the lack of increase in their numbers is sufficiently serious that in time it will operate to the detriment of the whole practice of medicine. In order to help remedy this very serious lack of recruitment, we propose the following measures to create positions and to improve the financial status of the specialty:

1. We recommend that each teaching hospital in Canada qualified for advanced graduate training in medicine or surgery and each large general hospital should have on its staff a medically qualified individual practising medical bacteriology as a full-time specialty.
2. We recommend that medically qualified bacteriologists should have parity of income with other medical laboratory specialists, since their services are as valuable to any hospital or public health department as those of any other specialist group.
3. We recommend that adequate training grants should be established to allow attendance at formal university courses leading to the M.A., M.Sc., Ph.D., or Diploma in Bacteriology.

It is believed that the implementation of these recommendations will do much to alleviate the present shortage of medically qualified bacteriologists. However, it should be stressed that recruitment will not improve until economic prospects improve and that even so it will be five years or more before trained men are available.

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CANADIAN SCHOOLS OF MEDICINE

The following general information regarding Canadian schools of medicine has been kindly supplied to us. Fuller details are available on request from each school.—EDITOR.

DALHOUSIE UNIVERSITY

Faculty of Medicine

Halifax, Nova Scotia

C. B. STEWART, M.D., Dean

THE FACULTY of Medicine of Dalhousie University was established in 1868, 50 years after the founding of the university. Difficulties over finances and space led to its separation from the university in 1875 and the establishment of the independent Halifax School of Medicine. In 1885 this was affiliated with the university and in 1911 became once more an integral part of Dalhousie as the Faculty of Medicine.

Dalhousie University is a privately endowed institution, but government grants are provided for the Faculties of Medicine and Dentistry. These grants have been made by the Governments of Nova Scotia and Newfoundland since 1947 and New Brunswick and Prince Edward Island since 1949. They constitute less than 20% of the income of the two faculties.

Three years of premedical study are required before admission to Medicine. Preference is given to candidates who complete all three premedical years at a recognized college or university, although a few present five credits from senior matriculation. The premedical years include 15 courses, 10 of which are required and five optional. Of the required classes three are in chemistry, two in biology, two in English and one each in physics, mathematics and history. When the premedical requirements were increased three years ago, an attempt was made to place emphasis on the arts subjects by requiring four of the five optional courses to be in the humanities or social sciences.

The medical course at Dalhousie is of five years' duration. The first four years are in university and the fifth is a rotating internship in affiliated hospitals. The academic year extends from early September to mid-May in the first four years and the internship is of 12 months' duration.

Dalhousie University has retained control of the fifth-year internship in order to ensure a balanced rotation. All students have two months on a general medical service, two months on medical specialties, two months on a general surgical service, two months on surgical specialties (including one month of emergency surgery), two months on obstetrics and two months on pædiatrics. Outpatient as well as inpatient training is included on all services. The M.D. degree is granted on completion of the rotating internship. Conjoint examinations are held at that time with the Medical Council of Canada and the Provincial Medical Board of Nova Scotia. The degree and licence to practise are therefore received in the same year. The rotating internship is also accepted by the Royal College of Physicians and Surgeons as one of the years qualifying for certification or fellowship. Dalhousie University will continue to grant the dual degree of M.D., C.M. until 1959. The degree thereafter will be M.D.

The chief teaching hospitals are the Victoria General Hospital (549 beds), Halifax Children's Hospital (204 beds), Grace Maternity Hospital (100 beds and 100 bassinets), Camp Hill Hospital (D.V.A.) (550 beds), Halifax Tuberculosis Hospital (126 beds), and the Dalhousie Public Health Clinic (outpatient services).

The student pays tuition fees of $500 in the first four years and $380 in the fifth year. Five entrance scholarships of $500 each are provided annually, two to residents of the mainland of Nova Scotia, one to a resident of Cape Breton, one to a resident of New Brunswick, and one to a resident of Newfoundland or Prince Edward Island. Several bursaries and prizes are also awarded each year totalling $2500, and a fund is available from which loans may be made to students on application.

In selecting students for admission to the Faculty of Medicine, priority is given to residents of the four Atlantic Provinces, but a small number are accepted from the other provinces of Canada, the United States and the British West Indies. The first-year class usually numbers 62, and in recent years the number of graduates has varied from 48 to 54.

A complete revision of the curriculum was carried out and several important changes were initiated in the 1955-56 session, primarily designed to increase interdepartmental teaching and to change the emphasis on certain subjects in accord with modern trends in medical education. An annual review of the curriculum since that time has resulted in a number of minor changes.

Each year is divided into three terms of 11 weeks with two intervals of one week for examinations. In the first term of the first year emphasis has been shifted from anatomy, formerly the major subject for beginners, to biochemistry. The clinical departments participate in some of the teaching of the first and second years, primarily as a means of motivating the students by demonstrating the practical value of the basic sciences. In turn, the interdepartmental teaching carries the basic sciences courses forward into the final years, both as a review of the fundamental principles and as a demonstration of clinical application.

Dalhousie Medical School carries out a very active program for the continuing education of physicians in the four Atlantic Provinces. Visiting lecturers are brought to Halifax and to other centres of the four Atlantic Provinces. Dalhousie staff members lecture or present clinics before local medical societies or other medical groups. Intensive special courses of one week's duration are given to small groups of approximately 10 practitioners by the Departments of Surgery, Medicine, Obstetrics, Pædiatrics and Anæsthesia. In several areas near Halifax groups of practitioners have enrolled

for an organized course of lectures, clinics and demonstrations held at weekly intervals and attended by two visiting Dalhousie teachers. All aspects of this postgraduate program have been growing rapidly. During the six years of operation of this postgraduate program, more than 10,000 doctors have registered.

With the completion of a new Dental Building in January 1958, additional space has been provided in the Forrest Building for the expansion of the Department of Anatomy and the establishment of research laboratories for the Department of Surgery.

LA FACULTE DE MEDECINE DE L'UNIVERSITE LAVAL DE QUEBEC

J.-B. JOBIN, M.D., Doyen,
Faculté de Médecine

CETTE Faculté fut fondée en même temps que l'Université Laval en 1852. Avant ce temps, la seule méthode d'éducation médicale était celle du préceptorat. Dès la fondation de l'Ecole, on nomme un certain nombre de professeurs, on adopte les premiers règlements et on s'occupe de l'organisation matérielle des locaux. C'est à partir de cette époque que les médecins commencèrent à aller en Europe parfaire leur formation médicale.

En 1854, la Faculté commence son enseignement qui comporte des leçons théoriques sur les matières fondamentales et de l'enseignement clinique à l'Hôtel-Dieu de Québec et à l'Hôpital de la Marine. Les élèves doivent même accompagner les médecins dans leurs visites à domicile, assister aux autopsies et suivre un cours de gériatrie.

En 1875, notre Faculté est reconnue par le Collège Royal d'Edimbourg. Puis on voit s'organiser progressivement toute une série de services et de cours. En 1924, on construit un nouveau pavillon de la médecine et on réorganise les départements de l'Ecole, la bibliothèque et les services administratifs.

Des professeurs de carrière sont alors attachés à chacun de ces départements et même l'on fait venir de France un certain nombre de professeurs qui contribuent à accentuer le caractère français de notre enseignement.

Pendant ce temps, les services cliniques s'étaient développés à la cadence des progrès du temps et l'ouverture de la Clinique Roy-Rousseau (maladies nerveuses et mentales), en 1926, celle de l'hôpital du St-Sacrement (hôpital général), en 1928, et celle de l'hôpital de l'Enfant-Jésus, en 1948, fournirent des facilités cliniques additionnelles très appréciables.

En 1932, se fonde la Société Médicale des Hôpitaux Universitaires de Québec. Cette société se réunit deux fois par mois et publie ses travaux dans le "Laval Médical". Les créations hospitalières, la reconstruction de l'Ecole de médecine, la réorganisation de l'enseignement et l'impulsion scientifique dont on a été témoin à cette époque sont en grande partie dues à la valeur exceptionnelle du doyen Arthur Rousseau.

En 1942, la biochimie se forme en un département autonome et en 1943, l'Ecole des Infirmières est fondée. Depuis 1942, le recrutement des professeurs se fait par concours et, s'organisent dans les hôpitaux universitaires des cours postscolaires en chirurgie, anesthésiologie, radiologie, tuberculose, anatomie chirurgicale, psychiatrie et dermatosyphiligraphie.

Ces cours post-gradués procurent à leurs élèves une formation complète qui leur permet habituellement de passer avec succès les concours de "Fellow" du Collège Royal des Médecins et Chirurgiens du Canada, et celui de Spécialiste du Collège des Médecins et Chirurgiens de la province de Québec.

En 1948, le Conseil Universitaire fonde un département de psychiatrie rattaché à la Faculté de Médecine et responsable du traitement des maladies mentales dans la région et de la formation des spécialistes en psychiatrie.

En 1949, le Conseil Universitaire décide de construire, sur la Cité Universitaire à Ste-Foy, un nouveau pavillon facultaire. La même année, l'Institut du Cancer de l'Université Laval est fondé et des cliniques anti-cancéreuses sont organisées dans les différents hôpitaux affiliés à l'Université. En 1950, le Conseil Universitaire constitue un Exécutif au Conseil de la Faculté de Médecine. En 1951, la Faculté affilie une école de technologie médicale dont le directeur est le docteur Rosaire Gingras. En 1953, l'Hôtel-Dieu St-Vallier de Chicoutimi, l'Hôpital St-Joseph de Trois-Rivières et l'Hôpital St-François d'Assise de Québec sont affiliés à l'Université Laval pour fins d'internat junior. La Faculté dispose de quinze hôpitaux qui servent à l'enseignement clinique.

Au cours de l'année 1955-56, les départements de médecine, de chirurgie, de neuro-psychiatrie et d'électro-radiologie ont été organisés et des directeurs ont été nommés à chacun de ces départements et en 1957, l'anatomie, l'histologie et l'embryologie se groupent en un département unique tandis que les départements de pédiatrie, d'obstétrique et de gynécologie, d'oto-rhino-laryngologie, d'ophtalmologie et d'anesthésiologie viennent s'ajouter aux précédents. Tous ces départements ont la responsabilité de coordonner les programmes d'étude et de voir à leur application tant pour l'enseignement clinique que pour l'enseignement théorique.

En septembre 1957, le nouvel édifice de la médecine dans la Cité Universitaire est terminé et mis à la disposition de la Faculté. Cette réalisation merveilleuse de la plus grande valeur fonctionnelle met à la disposition des professeurs et

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des étudiants tous les moyens matériels désirables tant pour la recherche que pour l'éducation médicale.

En 1957, notre Faculté compte 654 étudiants, quatre professeurs émérites, 43 professeurs titulaires, 44 professeurs agrégés, 112 assistants-universitaires et trois professeurs auxiliaires. Parmi ce personnel enseignant, il y a au-delà de 50 Fellows du Collège Royal des Médecins et Chirurgiens du Canada.

La bibliothèque de la Faculté dispose de 30,000 volumes et de 325 revues scientifiques.

Le Comité d'Admission est réorganisé et fonctionne suivant les standards habituels de l'Amérique du Nord. A Laval le doctorat en médecine se donne après la cinquième année qui est consacrée en totalité à un internat rotatoire qui se fait sous la surveillance de la Faculté dans les hôpitaux affiliés à notre Ecole de Médecine. Dans chacun des principaux hôpitaux généraux, l'Ecole de Médecine nomme et paye un moniteur qui consacre tout son temps à la surveillance du travail clinique et des études des internes juniors.

L'enseignement de la médecine se fait à Laval exclusivement en français, et à peu près tous nos professeurs avaient autrefois fait leurs études post-universitaires en Europe. Il n'en est plus de même aujourd'hui alors qu'une très forte proportion des nôtres ont fait leurs études post-universitaires en Amérique du Nord. Et nous nous devons de nous adapter aux conditions de géographie humaine dans lesquelles nous vivons. Il nous faut donc, en puisant à deux sources culturelles qui sont différentes à plus d'un point de vue, en arriver à une conception de la culture et de l'éducation médicale qui soient conformes aux normes qui ont cours en Amérique du Nord.

Depuis octobre 1956, nous avons des nôtres qui occupent des postes officiels de résident dans les hôpitaux de Paris, et des démarches sont actuellement en cours pour obtenir les mêmes avantages dans plusieurs villes de la province française.

Par ailleurs, nombreux sont les nôtres qui sont actuellement aux Etats-Unis et dans les autres provinces du Canada et nous en sommes heureux car ils en rapportent une culture et des amitiés qui favorisent singulièrement l'épanouissement de notre groupe ethnique sur le plan national.

Au cours de l'année 1957, notre Faculté a reçu la visite des représentants de l' "American Medical Association", de l' "Association of American Medical Colleges" et de l' "Association of Canadian Medical Colleges" et elle a été officiellement approuvée par ces organismes de classement.

Mais la médecine étant en perpétuelle évolution, l'éducation médicale doit s'adapter à des conditions qui changent d'année en année et c'est bien la ferme détermination de la Faculté de Médecine de Laval de ne pas faillir à cette tâche.

De nouvelles initiatives sont en voie de réalisation; nous en parlerons l'an prochain.

UNIVERSITE DE MONTREAL

Faculty of Medicine

Montreal, Quebec

WILBROD BONIN, M.D., Dean

THE UNIVERSITY of Montreal Faculty of Medicine, incorporated in 1920, is a component school of the University of Montreal, and is under the full jurisdiction of the university, a private institution. It is located in the same building as most other component schools of the university, 2900 Mount Royal Boulevard, Montreal. Legal ownership of the school is vested in the Board of Governors of the University of Montreal. The faculty is headed by a dean, a vice-dean and a secretary. The dean or vice-dean may be director of studies. Present officers are: Dr. Wilbrod Bonin, Dean and Director of Studies; Dr. Roger Dufresne, Vice-Dean; Dr. Joseph-Luc Riopelle, Secretary. Instruction in the faculty is in French.

Entrance requirements are, among others: (a) a sufficient knowledge of French; (b) a B.A. degree of the University of Montreal, or its equivalent, or the brevet of the College of Physicians and Surgeons of the Province of Quebec; (c) a preparation in premedical sciences (physics, chemistry, biology) of the same level as section B of the University of Montreal B.A. degree. Notwithstanding these entrance requirements, the faculty reserves its right to select only the better candidates. Completed application forms must be sent before June 21 of the year of contemplated admission.

The minimum period of professional training required by the University of Montreal as a qualification for the M.D. degree is five years, including one year of rotating internship in approved hospitals.

The medical curriculum includes instruction in laboratory courses in basic medical sciences at the university building, and clinical teaching in approved hospitals. There are four sessions of 32 weeks each, exclusive of examination periods. The sessions begin on the second Tuesday of September. Fifth-year internship begins on June 1 and ends on May 31 of the following year. A program of graduate work leading to M.Sc. and Ph.D. degrees is also provided by the Faculty of Medicine.

Three schools administered by the Faculty of Medicine, each of them with a director and an education committee, give courses in dietetics; medical technology; physiotherapy; occupational therapy; speech therapy and audiology—namely, the Institute of Dietetics, the School of Medical Technology, and the School of Rehabilitation.

Two series of postgraduate courses leading to a certificate (Anæsthesiology, Neuro-Anatomy and Neuro-Physiology) have been organized by the faculty. The program of study of anæsthesiology comprises a period of training of two years in anæsthesia, as well as a number of lectures, seminars and laboratory sessions on basic medical sciences. The course in neuro-anatomy and neurophysiology comprises 50 hours of lectures and laboratory sessions. The last-named course is given every two years.

Fees for the medical curriculum are $525 a year for the first four years and $325 for the last year, for Canadian residents. There are added charges for students' associations, etc. Fees for graduate courses (M.Sc., Ph.D.) are $375 a year.

The following hospitals are used for clinical teaching: Hôtel-Dieu, Notre-Dame, Miséricorde, Ste-Justine, Sacré-Cœur, St-Luc, Queen Mary Veterans' Hospital, Général de Verdun, Pasteur, Ste-Jeanne-d'Arc, St. Joseph Sanatorium, and Maisonneuve.

A considerable number of scholarships are provided by the Quebec Ministry of Youth and Social Welfare to medical students; and by the Quebec Ministry of Health to students of the School of Medical Technology and the School of Physiotherapy. Loans are made by the Kellogg Foundation to medical students, and by the Poliomyelitis Foundation to students of the School of Physiotherapy. In addition, scholarships and loans are available from a few other agencies.

McGILL UNIVERSITY

Faculty of Medicine

Montreal, Quebec

LLOYD G. STEVENSON, M.D., Dean

McGILL UNIVERSITY, established by Royal Charter in 1821, is privately endowed and the trustees of its funds are the Board of Governors who constitute "The Royal Institution for the Advancement of Learning".

The Faculty of Medicine came into existence in 1829, when the Montreal Medical Institution, founded at the Montreal General Hospital in 1824 and the first medical school in Canada, was transferred to the university.

Candidates for admission to the Faculty of Medicine must complete a minimum of three full years of study in a recognized college or faculty of arts and science in harmony with the requirements for the degree of B.A. or B.Sc. at the college where the courses are taken. During this period of premedical study the candidate must complete full courses, with laboratory work, in general and organic chemistry, physics and zoology. If possible the candidate should take the Medical College Admission Test conducted by the Educational Testing Service.

The course of study in medicine is of four years' duration. Each session begins early in September and continues until the middle of June, except in the final year when it is a month less in order that the degree of Doctor of Medicine, Master of Surgery (M.D., C.M.) may be awarded at the regular university convocation at the end of May. Graduates in medicine are required to complete at least one year of internship in an approved hospital before they become eligible for a licence to practise medicine. The annual tuition fee in medicine is $650.

The clinical facilities of a number of Montreal hospitals are available to the Faculty of Medicine. The Montreal General, Royal Victoria, and Montreal Children's Hospitals are the three general teaching hospitals. The Montreal Neurological Institute, Royal Victoria Montreal Maternity Hospital, Royal Edward Laurentian Hospital, Verdun Protestant Hospital, and the Alexandra Hospital for Infectious Diseases provide clinical teaching in special fields. The university is fortunate in having such a large amount of excellent clinical material made available for teaching of its students by these institutions. An opportunity for living-in by students in the senior year is provided by the general teaching hospitals when the student is in the medicine, surgery, pædiatrics and obstetrics rotations.

Opportunities for postgraduate instruction exist in all departments of the Faculty of Medicine. In the basic medical sciences such instruction is offered under the direction of the Faculty of Graduate Studies and Research leading to M.Sc. and Ph.D. degrees. A number of the clinical departments offer organized postgraduate courses of some years' duration leading to a diploma in the appropriate field, such as Internal Medicine or Psychiatry, from McGill University. A course of study leading to a Diploma in Tropical Medicine and Hygiene is offered by the Department of Health and Social Medicine.

The needs of the medical student and graduate are well served by the Medical Library, which contains more than 80,000 bound volumes and extensive collections of other items. The chief value of the library is in its periodical collection, and relatively little is lacking in the way of important journal literature in all languages. The ophthalmological section is particularly outstanding.

A unique possession of McGill University is the Osler Library. This special library of the history of medicine and science was bequeathed by Sir William Osler to his alma mater, and its collection of nearly 12,000 volumes is outstanding in this field.

Financial assistance for worthy and needy students is available in limited amount (a maximum of $500 yearly) through scholarships such as the Keith Hutchison and C. B. Keenan Memorial Scholarships and other smaller scholarships and bursaries established for this purpose. Limited assistance in the form of loans, repayable after graduation, is available to needy students with satisfactory academic standing, but not of scholarship calibre. Such awards cannot normally be considered until a student has established his competency by completion of at least one year of medical study.

UNIVERSITY OF OTTAWA

Faculty of Medicine

Ottawa, Ontario

J. J. LUSSIER, M.D., Ph.D., Dean

THE SCHOOL was organized in September 1945 as the Faculty of Medicine of the University of

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Ottawa, a private institution. The administration of the School is conducted by an Executive Council and a Faculty, both of which are presided over by the Dean. The Dean is responsible to the Rector in administrative matters, including staff appointments, and to the Senate of the university in academic matters.

The School is co-educational. The minimum academic requirement for admission to the first premedical year is Ontario Grade XIII honour matriculation, or equivalent certificates. Students who have obtained their bachelor's degree in arts or in science and who have completed the required courses in biology, chemistry and physics may be admitted to the first year of medicine.

The course consists of six sessions, comprising two premedical years and four years of medicine, after which the degree of Doctor of Medicine is granted.

The tuition fee for Canadian students is $375 for each of the premedical years, and $475 for each of the other years. Non-Canadian students add $300 to the regular fees. Postgraduate courses are offered leading to a M.Sc. and a Ph.D. degree in preclinical subjects. A series of postgraduate conferences is also arranged for practising physicians.

The chief teaching hospital is the Ottawa General Hospital, containing approximately 600 beds. Appointments to the medical staff are made by the governing body of the hospital on the recommendation of the Rector in Council. The heads of the clinical departments are also the heads of corresponding departments in the faculty. Additional clinical facilities are found in the Veterans' Pavilion at the Ottawa Civic Hospital, Saint Vincent's Hospital, the Royal Ottawa Sanatorium and the Rockcliffe Military Hospital.

Fourth-year students engage in field work two afternoons a week which provides domiciliary clinical teaching in co-operation with the Victorian Order of Nurses and the public health nurses of the municipal department. These students are thus given the opportunity of seeing patients in the setting of the home and family.

Registration for 1957-1958 is 287.

QUEEN'S UNIVERSITY

Faculty of Medicine

Kingston, Ontario

G. H. ETTINGER, M.D., Dean

QUEEN'S UNIVERSITY is an endowed institution administered by a Board of Trustees who are elected primarily by its graduates. Its income is made up of fees from students, interest on endowments, and grants from the provincial and dominion governments. The Faculty of Medicine is administered by a faculty board, consisting of the principal, vice-principal, dean, professors, and associate and assistant professors. The faculty selects the students, conducts the teaching and examinations, and recommends to the Senate those whom it considers worthy to receive degrees in medicine. The Senate, a body consisting of the principal, vice-principal, faculty deans and elected members from each faculty, awards all university degrees and determines all matters of an academic nature, including the approval of recommendations which come from the various faculties.

For admission to the Faculty of Medicine in 1958 the candidates must have Grade XIII matriculation standing, or equivalent, in English, a second language, physics, chemistry, two papers in mathematics, one of which should be trigonometry, and another optional subject. Sixty-four freshmen are admitted annually.

The course of six years is divided into two years of pre-medicine and four years of medicine. Following graduation, it is planned that the student will be required to spend one year in a rotating internship at a teaching hospital approved by the university, before he is given a certificate of completion of studies.

A limited number of students who have taken their premedical education in the Faculty of Arts in this or another university will be accepted for the first medical year.

The teaching hospitals in Kingston are: the General Hospital (483 beds), the Hôtel-Dieu (280 beds), St. Mary's Hospital (for chronic illness—116 beds), Ongwanada Sanatorium (for tuberculosis—160 beds), the Ontario Hospital (for mental illness—1000 beds), and the Kingston Military Hospital (125 beds).

Opportunities for research and graduate training are available in the basic medical and the clinical departments, and may be supplemented with teaching fellowships. A two-year course in medical radiology is open to graduates of any Canadian medical school, and leads to a diploma in either diagnostic—D.M.R.(D)—or therapeutic—D.M.R.(T)—radiology.

The degrees offered to undergraduates are M.D., C.M. After 1960 the M.D. alone will be awarded. Graduate degrees available are M.Sc. (Med.) and Ph.D.

The fees are: sessional fee for premedical undergraduate, $350; for medical undergraduate, $500; student interest fee (including health service), approximately $45; sessional fee for M.Sc.(Med.) and Ph.D., $250; D.M.R. fee, $250; degree fee, M.Sc. (Med.), $20; degree fee, Ph.D., $50.

Both men and women are admitted to the Faculty of Medicine. In the first year all women and a number of the men are housed in university residences. The university maintains a housing bureau and can advise students as to suitable boarding and lodging houses. Women not in residence may obtain meals at Ban Righ Hall, and men may be served in the cafeteria at the Students' Memorial Union. The average cost of room and meals is from $15 to $18 a week.

Entrance and matriculation scholarships varying in value from $30 to $1500 are open to candidates for admission to medicine. Details may be obtained from the University Registrar. In addition there are bursaries including Dominion-Provincial Student Aid Bursaries and the Atkinson Charitable

Foundation Bursaries. Applications for bursaries from these funds should be made through the high school principal. Reuben Wells Leonard Bursaries are also available; information should be obtained from the Toronto General Trusts Corporation, Toronto.

A number of scholarships and prizes are awarded at the conclusion of each undergraduate year, some of which are more than sufficient to pay the class fees. The total sum of these exceeds $12,000. A university loan fund offers help in meeting minor financial distress.

UNIVERSITY OF TORONTO

Faculty of Medicine

Toronto, Ontario

J. A. MACFARLANE, M.B., Dean

THE MEDICAL SCHOOL of the University of Toronto is a faculty of that university, and as such receives support from the Government of Ontario. It also receives funds from the fees paid by students, and from private endowments.

Candidates for admission to the first premedical year must have passed the Grade XIII examinations of the Department of Education of Ontario (or their equivalent) in the following subjects: English (2 papers), chemistry, physics, mathematics (2 of algebra, trigonometry, geometry), a foreign language (2 papers), and one other subject which may be chosen from mathematics, history, botany, zoology, or another foreign language.

In the two premedical years the student studies physics, chemistry, zoology, comparative anatomy, and psychology. He also take two years of English, two years in either philosophy or history, and two years in another subject of his own choosing from a limited list including mathematics, botany, and the humanities.

The number of students admitted to the first premedical year is 125. For the most part, these students come from the province of Ontario. The class is increased to 150 in the first medical year by the admission of students who have taken a degree in arts or science and have included in their course inorganic and organic chemistry, physics, biology, and comparative anatomy, as well as English. A limited number of applicants are admitted at this level from other universities in Ontario, from other provinces in Canada, and from the British Commonwealth.

The professional course consists of four years, the first two of which are devoted to the preclinical sciences, with the clinical work starting during the second year and continuing through the third and fourth years. The instruction in the final year is carried on almost entirely in the wards, laboratories and outpatient departments of the hospitals affiliated with the university. These include three general hospitals—the Toronto General, St. Michael's, and the Toronto Western; the Hospital for Sick Children; the Toronto Psychiatric Hospital; and the Women's College Hospital. The facilities of Sunnybrook Hospital and the Toronto Hospital for Tuberculosis are also used for postgraduate training.

The fees in the premedical years are $374 for men and $361 for women. In the first three medical years they are $591.50 for men and $578.50 for women; in the final year they are $601.50 and $588.50 respectively.

Limited financial aid is available to students from the university bursary fund, from Dominion-Provincial bursaries provided by the government, and from the Atkinson Foundation. There are also two loan funds, one established by the W. K. Kellogg Foundation for students in the upper years, and the other made available by the Medical Alumni Association. There are some forty-five other scholarships and bursaries from endowed funds and bequests, which amount to approximately $9000. In this latter group are included seven scholarships and also bursaries, provided by the Medical Alumni Association.

The average number of students graduating each year is 150. There are at present approximately 6000 living graduates of the school.

The degree granted by the university on completion of the course is Doctor of Medicine. Before 1930 the degree given on graduation was Bachelor of Medicine. The degree of Bachelor of Science (Medicine) is conferred following a year's special work devoted to research in one of the basic science departments of the faculty. The degree of Master of Surgery is awarded to graduates in medicine who have passed the examinations for fellowship in surgery of the Royal College of Physicians and Surgeons of Canada (or the Royal College of Surgeons of England, Edinburgh or Australia); who have completed three years' postgraduate work in surgery and at least one year's training in the teaching hospitals of the University of Toronto. Candidates for this degree must submit a satisfactory thesis, and pass an oral examination on this thesis.

The postgraduate program of the school includes diploma courses in Public Health, Industrial Hygiene, Psychiatry, and Medical Radiology as well as organized graduate courses in Anæsthesia, Medicine, Obstetrics and Gynæcology, Ophthalmology, Oto-Laryngology and Surgery. Short refresher courses for general practitioners are given annually and members of the teaching staff take part in various courses sponsored by the Medical Alumni Association and the Ontario Medical Association. An advanced graduate course in Medicine, Surgery, and Obstetrics and Gynæcology, lasting six weeks, is given each autumn. Special courses, usually of a week's duration, are given each year by the Departments of Ophthalmology and Oto-Laryngology either alone or in collaboration. A program of decentralized postgraduate medical education (formerly supported by the W. K. Kellogg Foundation and now by the university, the provincial government and the local groups concerned) has been carried out successfully during the past seven years. Under this arrangement senior teachers in the school visit centres in the

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province and conduct clinics on the cases presented by doctors in the community. A similar program of postgraduate clinics limited to the field of cardiovascular disease is carried out with the support of the Ontario Heart Foundation and the collaboration of divisions of the Ontario Medical Association.

The Faculty of Medicine also administers the Division of Physical and Occupational Therapy, and approximately 200 students are enrolled in the three-year course leading to the Diploma in Physical and Occupational Therapy.

The Department of Art as Applied to Medicine is under the direction of the faculty. It not only serves as a department of medical illustration for the school, but at the same time provides training for medical artists in a three-year course of study leading to the Diploma in Art as Applied to Medicine.

UNIVERSITY OF WESTERN ONTARIO

Faculty of Medicine

London, Ontario

J. B. COLLIP, C.B.E., M.D., F.R.S., Dean
G. E. HOBBS, M.D., Assistant Dean

THE FACULTY OF MEDICINE, University of Western Ontario, has been in continuous existence since the first classes were held in 1882. Originally operating as a joint stock company, this was discontinued and the Faculty of Medicine came under the direct control of the same Board of Governors as the rest of the university in 1912, and moved to the present medical building in 1921.

The University of Western Ontario is a private university but in receipt of government grants in common with other universities with faculties of medicine in the province.

The course leading to the degree of Doctor of Medicine requires a minimum of six years. The teaching is provided for two years in the Faculty of Arts and four years in the Faculty of Medicine. In the Faculty of Arts the first year is taken in common with all sciences. The majority of students then proceed to a second premedical year where the subjects and content have been modified to be more relevant to medicine. Arrangements are made to allow a limited number of students with other premedical backgrounds to enter the medical course.

Grade XIII standing in English, mathematics (3 papers), or algebra and geometry plus botany or zoology, chemistry, physics, and one other language is required for admission to the premedical course. During the two premedical years teaching is provided at the campus of the university. In the four medical years teaching is carried out in the Faculty of Medicine building, a section of the Meek Laboratory at Victoria Hospital, and affiliated hospitals. The Faculty of Medicine building is located in the vicinity of Victoria Hospital, near the centre of the city and some distance from the main buildings of the university.

The tuition fees are $375 for each of the two premedical years and $585 for each of the four years in the Faculty of Medicine.

Clinical teaching is carried out in Victoria Hospital, War Memorial Children's Hospital, Westminster Hospital, St. Joseph's Hospital, St. Mary's Hospital, Beck Memorial Sanatorium, the Ontario Hospitals in London and St. Thomas, and Bethesda Home and Hospital.

A large number of scholarships and awards are available, as well as a substantial student loan fund.

Funds are available to bring outstanding lecturers to the Faculty of Medicine each year in medicine, surgery, pathology, and psychiatry.

Facilities are available for training in both the clinical specialties and basic sciences. Inquiries should be directed to the department concerned.

UNIVERSITY OF MANITOBA

Faculty of Medicine

Winnipeg, Manitoba

LENNOX G. BELL, M.D., Dean

THE UNIVERSITY OF MANITOBA, which is a provincial institution, confers the degree of Doctor of Medicine. Seventy-two students are admitted to the Faculty of Medicine annually. For admission, following junior matriculation three premedical years in the Faculty of Arts and Science are required. The course in the Faculty of Medicine is four years, consisting of two years largely devoted to the preclinical subjects, a third year in which instruction is mainly clinical, and a fourth year in which clinical instruction is largely carried out at the bedside. The chief teaching hospitals are the Winnipeg General Hospital, St. Boniface Hospital, Children's Hospital of Winnipeg, and Deer Lodge Veterans' Hospital. The main university buildings are in Fort Garry, and the buildings of the Faculty of Medicine are adjacent to the Winnipeg General Hospital. Fees in the Faculty of Medicine are $482 a year. Dr. David A. Stewart Memorial Scholarships of a value of from $200 to $450 annually are available to a limited number of students. Assistance may also be obtained from the W. K. Kellogg Student Loan Fund and from Dominion-Provincial Youth Training Scholarships. Scholarships of smaller amounts are also available.

Outstanding features of the Faculty of Medicine are: an excellent library housed in a new wing, and a large museum of pathology in which approximately 4000 specimens are permanently displayed.

In order that senior students may learn at first hand something of the conditions, problems and satisfactions of rural practice, fourth-year students are encouraged to spend a period of two weeks under a selected rural preceptor. This has proved to be a valuable educational feature of the course.

Four-year postgraduate diploma courses in Surgery and Anæsthesiology are offered. These consist of a series of graded resident appointments at the teaching hospitals, and lectures and seminars especially designed for candidates preparing for the examinations of the Royal College of Surgeons of Canada.

UNIVERSITY OF SASKATCHEWAN

Faculty of Medicine

Saskatoon, Sask.

J. W. MACLEOD, M.D., Dean

THE COLLEGE OF MEDICINE had its origin in the School of Medical Sciences, formed in 1926 to provide the first two years of medical studies. The curriculum was altered in 1945 to conform to the four-year pattern adopted by most Canadian universities. With the laying of the cornerstone of the University Hospital and consolidation of plans for clinical departments, the medical school became the College of Medicine in 1952. Clinical departments were set up two years later with full-time heads in medicine, surgery, obstetrics and gynæcology, psychiatry, pædiatrics, rehabilitation medicine, anæsthesia, ophthalmology, diagnostic radiology, therapeutic radiology, and social and preventive medicine. With assistants in several departments the number of full-time teachers in the clinical departments of the College of Medicine and University Hospital in 1957-58 is 27. Working with these are 120 part-time teachers, of whom 30 are general practitioners. The first M.D. degrees were conferred at the regular university convocation on May 10, 1957. A year of internship satisfactory to the College of Physicians and Surgeons of Saskatchewan is required before licensure.

The Medical Building, opened in 1949, has four full floors and a fifth floor containing animal quarters, operating rooms and radioisotope laboratories. Connecting with it on three floors is the University Hospital. Opened in January 1955, this 550-bed hospital is running at 80 to 85% occupancy. Special features include psychiatric and rehabilitation wards on the fifth floor, sharing facilities in therapy; a large cafeteria dining room on the sixth floor with facilities for meal-time committee meetings; a drug-manufacturing unit run as a teaching activity by the College of Pharmacy, and laboratories for pulmonary function studies, cardiac catheterization and research in radiation physics. In the hospital are housed also the Cancer Clinic of the Provincial Department of Public Health, the Canadian Red Cross Society Blood Bank and an outpatient department occupying two floors of one wing. A gift of $250,000 from the Saskatchewan Division of the Canadian Cancer Society was the beginning of a medical research building now under construction. When it opens in the spring of 1958, one floor will house a cancer research unit supported by the National Cancer Institute of Canada. This will include additional animal quarters, operating rooms, an electronics workshop, facilities for isotope and radiation studies, constant-temperature rooms and a module system of laboratories suitable for biochemistry, tissue culture and other standard research techniques.

The University Hospital does not come under the university, but is administered by a board established by the University Hospital Act. By the latter's terms three representatives of the university are on the Hospital Board, two of whom must always be the President of the university and the Dean of Medicine. The identifying of medical care with educational goals is further assured by the rule whereby the professorial heads of university departments are also the chiefs of the corresponding hospital departments. In line with the goal of the College of Medicine to prepare graduates who will meet the needs of Saskatchewan communities, special attention is being given to the training of family doctors. During the undergraduate period the student is exposed to the best possible examples of the general practice of medicine. This is aided by a rural preceptorship in the final year and by the close collaboration in the clinical departments of full-time teachers, part-time specialists and selected general practitioners. The latter are attached to services in the University Hospital through the Department of General Practice. A specially arranged two-year internship is urged as minimum training for those who desire to become family doctors. Clinical teaching is carried out also at the Saskatoon City Hospital, at St. Paul's Hospital, at the Saskatoon Sanatorium and at Saskatchewan Hospital at North Battleford (psychiatry). The first two of these are affiliated with the university for specialist training in several specialties. Fourth-year students spend a month in a Regina hospital in either obstetrics or pædiatrics.

Entrance to medicine is by the bachelor's degree in arts or science, or the completion of at least two years of university work after Grade XII. Apart from required work in English, a foreign language, physics, chemistry and biology, emphasis is placed on liberal studies along lines of personal interest. This may be illustrated by the following excerpt from the calendar: "Students are reminded that there is no advantage in taking medical subjects such as biochemistry, physiology or bacteriology during their premedical work. Nor will the accumulation of many credits in science subjects give one applicant advantage over another with similar accomplishment in other academic fields, such as humanities or social sciences. Since the branches of medicine are so varied, there is room for a wide variety of talents and backgrounds among those admitted to its study. In any one class it is hoped that there will be some students who have gone deeply into one or more of the following fields: the physical or biological sciences or mathematics; philosophy, psychology, sociology or anthropology; history, literature or languages, either classical or modern."

Forty students are admitted, of whom about 10% may be from outside the province. The latter are selected on the basis of distinctive qualities in background or experience as well as scholarship. The tuition fee for first-year medicine is $425 and for subsequent years $475. Other student fees,

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including health service, are $45. A limited number of students may live in university dormitories.

Postgraduate study towards M.Sc. or Ph.D. degrees may be carried out in the medical science departments. Advanced work in the clinical fields may be arranged through the heads of the respective departments or the Executive Director of the University Hospital. Residency training is available in most specialties. Extra clinical experience is provided for general practitioners on an individual basis.

UNIVERSITY OF ALBERTA

Faculty of Medicine

Edmonton, Alberta

J. S. THOMPSON, M.D.,
Executive Secretary

THE FACULTY OF MEDICINE of the University of Alberta is administered as part of the University of Alberta, which is a provincial government institution.

The minimum entrance requirements are two complete years of university work following senior matriculation. The required subjects are inorganic chemistry, organic chemistry, physics and zoology. The other classes that the student takes may be in the humanities or the sciences, with no particular value being attached to any subject.

Each of the first three years consists of 33 weeks, exclusive of holidays and final examinations. The final year is about 30 weeks. The degree given is Doctor of Medicine.

The schedule of fees is: first year $350; second year $460; third year $510; fourth year $510. Students in all years pay, in addition, $41.24 in general university fees.

The chief teaching hospitals are the University Hospital, the Royal Alexandra Hospital, the Edmonton General Hospital, and the Misericordia Hospital, which are all general hospitals in the city of Edmonton. Use is also made of the facilities of the Oliver Mental Hospital, the Charles Camsell Indian Hospital, and the Aberhart Tuberculosis Sanatorium, all of which are located in Edmonton.

Financial aid for students is somewhat limited. Grants and loans are available through the Students Assistance Act of the Province of Alberta and through a W. K. Kellogg Student Loan Fund as well as through a small loan fund established by the Class of 1941. The College of Physicians and Surgeons of Alberta donates $200 scholarships to the two top-ranking students in each of the first three years, and also provides a fellowship of $1200 (plus fees for the next academic year), which is awarded to a student who takes a year from his medical course to obtain further training in one of the basic sciences. Certain small prizes for proficiency in various subjects are available, as are some scholarships open to the student body of the university as a whole.

At present a general revision in the undergraduate curriculum is in progress, aimed at increasing the amount of time the student spends in contact with individual patients while maintaining an adequate training in the basic sciences which are so important to the understanding of disease processes in these patients.

The first year of the new curriculum covers all of normal anatomy and physiology and most normal biochemistry plus short courses in human genetics, social medicine and psychiatry. The second year covers bacteriology, pharmacology, and general and some special pathology plus a course on physical diagnosis and one on the manifestations of disease. These last two courses are given by various clinical and basic science departments under the general direction of one full-time clinician.

The new curriculum for the third year has not yet been worked out although the curriculum committee is at present engaged in this task. It is expected that in this year also there will be a reduction in the amount of didactic teaching and increased emphasis on student-patient relationships.

Facilities for taking advanced degrees are available in various departments including Anatomy, Biochemistry, Bacteriology, Pathology, Physiology, Medicine and Surgery. Such study is under the jurisdiction of the School of Graduate Studies of the University of Alberta.

The committee of the Faculty of Medicine on Graduate Studies has at present under its direction a large number of doctors at various stages of their training in different specialties. No degree is granted by the university at the end of this program, since it is designed to give the doctor a comprehensive training in his specialty that will enable him to take the certification or fellowship examinations of the Royal College of Physicians and Surgeons of Canada with a reasonable chance of success. Since the program for each candidate is shaped to suit his particular needs, no details of the program can be given here.

Our Committee on Continuation Studies works closely with the College of Physicians and Surgeons of Alberta to provide postgraduate programs for local practitioners. These usually consist of: (1) a week-long refresher course given annually at the university, (2) visits by travelling teams to centres in Alberta, (3) short courses of two or three days' duration in certain fields such as electrocardiography, orthopædic surgery, pædiatrics, general medicine and surgery.

UNIVERSITY OF BRITISH COLUMBIA

Faculty of Medicine

Vancouver, British Columbia

JOHN W. PATTERSON, M.D., Dean
CHARLES G. CAMPBELL, M.D.,
Assistant Dean

THE UNIVERSITY OF British Columbia Faculty of Medicine was established in 1950 and its first class graduated in May 1954.

The physical plant consists of a group of basic medical sciences buildings on the main campus of the university. A number of departmental offices and laboratories of the clinical departments are housed at the Vancouver General Hospital. At the hospital, over 500 beds are assigned for teaching medical students. In addition, the facilities of St. Paul's Hospital, Provincial Mental Hospital (Essondale), the Children's Hospital, and the G. F. Strong Rehabilitation Centre are used in clinical teaching.

A new Medical School and Pathological Services building has been completed at the Vancouver General Hospital site. This houses the departments of medicine, pathology, and surgery, as well as providing library facilities, administrative offices and students' areas. The library is a biomedical branch library of the University Library on the main campus.

The entrance requirement of the Faculty of Medicine includes three years of premedical studies in an approved Faculty of Arts and Sciences. Minimum course requirements include one year of English, one year of mathematics, three years of chemistry, one year of physics and one year of biology-zoology.

Classes for the first year in medicine are limited to 60 students. There are no restrictions as to residence. No applicant is accepted who has been required to withdraw from another medical school. A personal interview may be requested of any applicant.

The academic year begins on the first Tuesday after Labour Day. Tuition fees in each year of the medical course are $445. Incidental fees are an alma mater fee of $18. No extra tuition fees are charged non-residents, but non-residents of the province must pay a $10 hospitalization fee.

The examinations of the Medical Council of Canada are used as conjoint final examinations in the fourth year. All written and oral examinations are held in late April or early May. Each candidate for the degree of Doctor of Medicine is required to present a thesis acceptable to the faculty.

Application blanks are available between August 15 and December 15. Accepted applicants must pay a preliminary fee of $100 to be applied on the tuition of the first year of the medical course. Correspondence should be addressed to the Faculty of Medicine, University of British Columbia.

LIST OF CANADIAN HOSPITALS APPROVED FOR ADVANCED GRADUATE TRAINING

BY THE ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA, 150 Metcalfe Street, Ottawa 4, Ontario, as at January 31, 1958

Previous lists are superseded by this list.

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New Westminster	Royal Columbian Hospital	520
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	Shaughnessy Hospital (D.V.A.)	520
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	Vancouver Unit, Division of Tuberculosis Control	520
Victoria	Royal Jubilee Hospital	520
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MANITOBA		
Brandon	Hospital for Mental Diseases	520
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Selkirk	Hospital for Mental Diseases	520
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NUMERICAL REFERENCES

1. Part-time training (a maximum period of four months' training in which the remainder of the year is spent in resident training in an institution with approval for at least one year in the specialty concerned).
2. Six months' training.
   (a) Six months' training—limited to one trainee.
   (b) Six months' training—training is integrated as part of a university scheme of postgraduate instruction and carries the approval of the head of the university department concerned.
   (c) As 2(b) but training limited to one trainee.
   (d) Six months' training—not to be substituted for six months of the required two years of resident training in the specialty concerned in an approved hospital.
   (e) Six months' training—provisional. (College Office will provide details on request.)
3. One year's training.
   (a) One year's training—limited to one trainee.
   (b) One year's training—limited to one trainee, provided the second year of the specialty training is taken in a university centre.
   (c) One year's training—limited to one trainee—not to be substituted for one of the two required years of resident training in the specialty concerned in an approved hospital.
   (d) One year's training—limited to two trainees.
   (e) One year's training—limited to two trainees; not to be substituted for one of the two required years of resident training in the specialty concerned in an approved hospital.
   (f) One year's training—limited to three trainees.
   (g) One year's training—not to be substituted for one of the two required years of resident training in the specialty concerned in an approved hospital.
   (h) One year's training, only six months of which may apply to the two years of required residency training in the specialty.
   (i) One year's training, provided the second required year in the specialty is spent in a university teaching hospital.
   (j) One year's training. For Certification, one further year of training is approved; this second year not to be substituted for one of the two required years of resident training in the specialty concerned in an approved hospital.

(k) One year's training—training is integrated as part of a university scheme of postgraduate instruction and carries the approval of the head of the university department concerned.
(l) One year's training—Clinical Pathology only.
(m) One year's training—Pathological Anatomy or Pathological Anatomy and Clinical Pathology.
(n) One year's training, provided the second year of the specialty training is taken in a university centre.
(o) One year's training—limited to one trainee. Training is integrated as part of a university scheme of postgraduate instruction and carries the approval of the head of the university department concerned.
(p) One year's training—limited to one trainee—not to be substituted for one of the two required years of resident training in the specialty concerned in an approved hospital. The year will be accepted as the necessary year of resident training in General Surgery for the Fellowship examination in Surgery as modified for Obstetrics and Gynæcology, and the Certification examination in Obstetrics and Gynæcology.

4. Two years' training.
(a) Two years' training—limited to one trainee in each year.
(b) Two years' training—limited to two trainees in each year.
(c) Two years' training—limited to three trainees in each year.
(d) Two years' training on condition that trainee will take an additional year of training in the specialty in an institution where training in the basic sciences may be obtained.
(e) Two years' training—in a program of three years' training in Diagnostic and/or Therapeutic Radiology the extra year of training must be spent at another approved institution. In a program of two years in each of the subjects for double qualification one year must be spent in each of the subjects at another approved institution, preferably at a university department.
(f) Two years' training—limited to a total of four trainees at any one time.
(g) Two years' training—for a total of three trainees at any one time.
(h) Two years' training—training is integrated as part of a university scheme of postgraduate instruction and carries the approval of the head of the university department concerned.
(i) Two years' training—limited to one trainee in each year. Training is integrated as part of a university scheme of postgraduate instruction and carries the approval of the head of the university department concerned.
(j) Two years' training—limited to two trainees in each year. Training is integrated as part of a university scheme of postgraduate instruction and carries the approval of the head of the university department concerned.
(k) Two years' training—optional number of trainees in the first year and one trainee in the second year.
(l) Two years' training for one trainee only.
(m) Two years' training for two trainees, one senior trainee and one junior trainee.
(n) Two years' training, the second year of which cannot be substituted for one of the two minimum required years in the specialty concerned in an approved hospital.
(o) Two years' training—two trainees in the first year and one in the second year.

5. Three years' training.
(a) Three years' training—limited to one trainee in each year.
(b) Three years' training—limited to two trainees in each year.
(c) Three years' training—limited to two trainees each in the first and the second year, and one trainee in the third year—a total of five trainees at one time.

6. **Approval of training in Department of Veterans Affairs Hospitals.**
In D.V.A. hospitals there are no children, few and in some instances no female patients, and a lack of certain types of disease among male patients. For these reasons a D.V.A. hospital cannot provide a complete course of advanced graduate training in any specialty. D.V.A. hospitals are approved for advanced graduate training in medical and surgical specialties as specified for each hospital. While the approval of a D.V.A. hospital may be for two or three years of training, candidates who spend more than one year in resident training at a D.V.A. hospital are reminded **that one of the two minimum required years of resident training in the specialty concerned must be spent in an approved civilian hospital.**

7. Group approval.
(a) **Group Approval—Diagnostic Radiology—Halifax, Nova Scotia.**
Camp Hill Hospital, Children's Hospital, Halifax Infirmary and Halifax Tuberculosis Hospital—for full training in Diagnostic Radiology provided training in basic science is taken concurrently at Dalhousie University.
(b) **Group Approval—Physical Medicine and Rehabilitation—London, Ontario.**
Westminster Hospital, Victoria Hospital, War Memorial Children's Hospital—Polio Centre, St. Mary's Hospital, and Woodeden Crippled Children's Centre, London—one year's training in Physical Medicine and Rehabilitation, provided that time spent at Westminster Hospital is restricted to three or four months.
(c) **Group Approval—Physical Medicine and Rehabilitation—Montreal, Quebec.**
Hôpital Pasteur and Rehabilitation Centre, Montreal—two years training in Physical Medicine and Rehabilitation—limited to two trainees in each year—on condition that trainees obtain some additional training outside of these two institutions.
(d) **Postgraduate Course in Radiology under auspices of Laval University, Quebec, Quebec.**
Course to include radiological facilities of the following ten hospitals: Hôpital Ste-Foy, Hôtel-Dieu de Québec, Hôpital du St-Sacrement, Hôpital de l'Enfant-Jésus, Hôpital St-Michel Archange (Mastaï), Hôpital Laval (Ste-Foy), Hôpital St-François d'Assise, Jeffery Hale Hospital, Hôtel-Dieu St-Vallier (Chicoutimi) and Hôpital St-Joseph (Trois-Rivières).
Conditions: Each trainee must be registered under the training scheme of Laval University. Length of time in larger hospitals not to exceed one year; in the small hospitals not more than six months. Each trainee must spend one year in another approved centre in Canada or abroad in his particular specialty. Those training in both Diagnostic Radiology and Therapeutic Radiology must spend one year in each specialty at another recognized centre.
(e) **Psychiatric Training Program under auspices of University of Ottawa, Ottawa, Ontario.**

8. Approved for full training.

Residency Training taken outside Canada

Residency training taken outside Canada will be accepted when taken in:

1. Hospitals in the United States of America approved for such training by the Council on Medical Education and Hospitals of the American Medical Association, or by the American College of Surgeons.
2. Hospitals in Great Britain approved for such training by the Royal College of Surgeons of England, the Royal College of Obstetricians and Gynæcologists, or the Examining Board in England.
3. A university or other training organization approved as a whole by The Royal College of Physicians and Surgeons of Canada.

The Credentials Committee has power to accept or reject training taken in Canada or abroad in institutions not included under (1), (2) or (3), and in institutions under any of these categories where the specific Canadian requirements are not met.

While no precise regulations about it have yet been made, the College disapproves in principle of resident training taken in a succession of hospitals approved for training only for one or two years.

PROVINCE OF ALBERTA

Calgary	Approved for Training In:
Baker Memorial Sanatorium	Internal Medicine—3(g) Thoracic Surgery—3(g)
Calgary General Hospital	Anæsthesia—3, Pathology—3(a) Radiology (Diagnostic)—3
Colonel Belcher Hospital (D.V.A.)	Internal Medicine—3 and 6 Surgery (General)—3 and 6

	Approved for Training In:
Holy Cross Hospital	Pathology—3(a)
Provincial Laboratory of Public Health (Southern Branch)	Pathology—3(k)
Edmonton	
Aberhart Memorial Sanatorium	Internal Medicine—3(g)
Charles Camsell Indian Hospital	Internal Medicine—3(g) Thoracic Surgery—3(g)
Edmonton General Hospital	Anæsthesia—3 Internal Medicine—3 Pathology—4 Surgery (General)—3
Misericordia Hospital	Internal Medicine—3(a) Pathology—3(a) Surgery (General)—3(a)
Royal Alexandra Hospital	Anæsthesia—4(j) Internal Medicine—3 Obstetrics and Gynæcology—4(b) Orthopædic Surgery—3(a) Pædiatrics—3, Pathology—4 Radiology (Diagnostic)—3(d) Surgery (General)—4(k)
University of Alberta Hospital	Anæsthesia—8, Bacteriology—8 Internal Medicine—8 Neurosurgery—8 Obstetrics and Gynæcology—8 Ophthalmology—8 Orthopædic Surgery—8 Otolaryngology—8 Pædiatrics—4, Pathology—8 Psychiatry—3 Radiology (Diagnostic)—8 Radiology (Therapeutic)—3 Surgery (General)—8, Urology—8
Workmen's Compensation Board Rehabilitation Clinic	Physical Medicine and Rehabilitation—3(a)
Lethbridge	
St. Michael's General Hospital	Pathology—3
Ponoka	
Provincial Mental Hospital	Psychiatry—3
PROVINCE OF BRITISH COLUMBIA	
Essondale	
Crease Clinic of Psychological Medicine	Surgery (General)—3(g)
Provincial Mental Hospital	Psychiatry—3
New Westminster	
Royal Columbian Hospital	Anæsthesia—3, Pathology—3(d)
Vancouver	
British Columbia Cancer Institute	Radiology (Therapeutic)—8
Children's Hospital	Orthopædic Surgery—2 Pædiatrics—2
Rehabilitation Centre of the Western Society for Rehabilitation	Physical Medicine and Rehabilitation—3
St. Paul's Hospital	Anæsthesia—3 Internal Medicine—3(d) Obstetrics and Gynæcology—3(d) Pædiatrics—3, Pathology—3 Radiology (Diagnostic)—4(e) Radiology (Therapeutic)—4(e) Surgery (General)—3(f)
St. Vincent's Hospital	Anæsthesia—2(b)
Shaughnessy Hospital (D.V.A.)	Anæsthesia—5 and 6 Internal Medicine—5 and 6 Ophthalmology—3(g) and 6 Orthopædic Surgery—5 and 6 Otolaryngology—3(g) and 6 Pathology—5 and 6 Psychiatry—5 and 6 Radiology (Diagnostic)—5 and 6 Surgery (General)—5 and 6 Urology—5 and 6
Vancouver General Hospital	Anæsthesia—8, Bacteriology—8 Internal Medicine—8 Obstetrics and Gynæcology—8 Ophthalmology—8 Orthopædic Surgery—8 Otolaryngology—8, Pædiatrics—8 Pathology—8, Psychiatry—3(a) Radiology (Diagnostic)—8 Surgery (General)—8 Thoracic Surgery—8, Urology—8
Vancouver Unit, Division of Tuberculosis Control	Internal Medicine—3(g) Thoracic Surgery—3(g)
Victoria	
Royal Jubilee Hospital	Pathology—3 Radiology (Diagnostic)—3 Radiology (Therapeutic)—4(d)
Victoria Veterans Hospital (D.V.A.)	Internal Medicine—3 and 6 Surgery (General)—3 and 6
PROVINCE OF MANITOBA	
Brandon	
Hospital for Mental Diseases	Psychiatry—3
Ninette	
Manitoba Sanatorium	Internal Medicine—3(g) Thoracic Surgery—3(g)
St. Boniface	
St. Boniface Hospital	Anæsthesia—4(b) Internal Medicine—4 Obstetrics and Gynæcology—3(a) Pædiatrics—3(d), Pathology—4 Radiology (Diagnostic)—4 Radiology (Therapeutic)—4 Surgery (General)—4
St. Vital	
St. Boniface Sanatorium	Internal Medicine—3(g) Thoracic Surgery—3(g)
Selkirk	
Hospital for Mental Diseases	Psychiatry—3
Winnipeg	
Children's Hospital	Anæsthesia—3(o) Pædiatrics—8, Pathology—3(g) Surgery (General)—3(g)
Deer Lodge Hospital (D.V.A.)	Anæsthesia—5 and 6 Internal Medicine—5 and 6 Neurosurgery—5 and 6 Orthopædic Surgery—5 and 6 Pathology—5 and 6 Psychiatry—5 and 6 Radiology (Diagnostic)—5 and 6 Surgery (General)—5 and 6 Urology—5 and 6
Salvation Army Grace Hospital	Obstetrics—3(d)
Shriners' Hospital for Crippled Children (Winnipeg Unit)	Orthopædic Surgery—2(b)
Winnipeg Clinic	Internal Medicine—3(g)
Winnipeg General Hospital	Anæsthesia—8, Bacteriology—4(g) Internal Medicine—8 Neurosurgery—3(a) Obstetrics and Gynæcology—8 Ophthalmology—3(a) Orthopædic Surgery—5 Pædiatrics—2(d), Pathology—8 Radiology (Diagnostic)—8 Radiology (Therapeutic)—8 Surgery (General)—5, Urology—8
Winnipeg Psychopathic Hospital	Psychiatry—8

	Approved for Training In:
PROVINCE OF NEW BRUNSWICK	
Moncton	
Moncton General Hospital	Radiology (Diagnostic)—3(a)
Saint John (Lancaster)	
Lancaster Hospital (D.V.A.)	Internal Medicine—3 and 6 Pathology—2 and 6 Surgery (General)—3 and 6
Provincial Hospital	Psychiatry—3
Saint John	
Saint John General Hospital	Anæsthesia—3(j) Internal Medicine—3(j) Obstetrics and Gynæcology—3(j) Ophthalmology—3(j) Otolaryngology—3(j) Pædiatrics—3, Pathology—4(a) Radiology (Diagnostic)—4(d) Radiology (Therapeutic)—3(j) Surgery (General)—3(j) Urology—3(j)
PROVINCE OF NEWFOUNDLAND	
St. John's	
Hospital for Mental and Nervous Diseases	Psychiatry—3
St. John's General Hospital	Anæsthesia—3, Bacteriology—3(c) Internal Medicine—3(c) Pathology—3 Radiology (Diagnostic)—3(c) Surgery (General)—3(c)
Dartmouth	
Nova Scotia Hospital	Psychiatry—3
Halifax	
Camp Hill Hospital (D.V.A.)	Anæsthesia—3 and 6 Internal Medicine—5 and 6 Pathology—3(l) and 6 Psychiatry—3 and 6 Radiology (Diagnostic)—7(a) and 6 Surgery (General)—5 and 6 Urology—5 and 6
The Children's Hospital	Anæsthesia—1, Pædiatrics—4 Psychiatry—3 Radiology (Diagnostic)—7(a)
Grace Maternity Hospital	Obstetrics—8
Halifax Infirmary	Radiology (Diagnostic)—7(a)
Halifax Tuberculosis Hospital	Internal Medicine—3(g) Radiology (Diagnostic)—7(a)
Victoria General Hospital	Anæsthesia—8, Bacteriology—8 Gynæcology—8 Internal Medicine—8 Neurosurgery—3 Pathology—8, Psychiatry—3 Radiology (Diagnostic)—8 Radiology (Therapeutic)—8 Surgery (General)—8 Urology—8
Kentville	
Nova Scotia Sanatorium	Internal Medicine—3(g) Thoracic Surgery—3(g)
Sydney	
Point Edward Hospital	Internal Medicine—2(e)
PROVINCE OF ONTARIO	
Barriefield	
Kingston Military Hospital	Internal Medicine—3(c) Radiology (Diagnostic)—3(k) Surgery (General)—3(g)
Fort William	
Regional Laboratory	Pathology—3(g)
Hamilton	
Hamilton General Hospital	Anæsthesia—4 Internal Medicine—3 Obstetrics and Gynæcology—3 Pædiatrics—3, Pathology—4 Radiology (Diagnostic)—3 Radiology (Therapeutic)—3 Surgery (General)—3
Mountain Sanatorium	Bacteriology—2 Internal Medicine—3(g) Pathology—2 Thoracic Surgery—3(g)
Ontario Hospital	Psychiatry—3
St. Joseph's Hospital	Anæsthesia—3, Pathology—3
Kingston	
Hotel-Dieu Hospital	Anæsthesia—3 Internal Medicine—3(a) Obstetrics and Gynæcology—3(a) Pathology—3 Radiology (Diagnostic)—3 Surgery (General)—3(a)
Kingston General Hospital	Anæsthesia—8, Bacteriology—8 Internal Medicine—8 Obstetrics and Gynæcology—8 Pædiatrics—3, Pathology—8 Radiology (Diagnostic)—8 Radiology (Therapeutic)—8 Surgery (General)—8 Urology—3
Ontario Hospital	Psychiatry—3
London	
Beck Memorial Sanatorium	Internal Medicine—3(g) Thoracic Surgery—3(g)
Ontario Hospital	Psychiatry—8
Regional Laboratory	Pathology—3(g)
St. Joseph's Hospital	Anæsthesia—3(k) Internal Medicine—3 Obstetrics and Gynæcology—3 Psychiatry—3 Radiology (Diagnostic)—3 Surgery (General—3(a)
Victoria Hospital	Anæsthesia—8 Internal Medicine—8 Obstetrics and Gynæcology—8 Pædiatrics—4, Pathology—8 Physical Medicine and Rehabilitation—7(b) Psychiatry—3 Radiology (Diagnostic)—8 Radiology (Therapeutic)—8 Surgery (General)—8
Westminster Hospital (D.V.A.)	Anæsthesia—5 and 6 Internal Medicine—5 and 6 Pathology—3 and 6 Physical Medicine and Rehabilitation—7(b) and 6 Psychiatry—5 and 6 Radiology (Diagnostic)—3 and Surgery (General)—5 and 6 6
Malton	
Rehabilitation Centre, Workmen's Compensation Board	Physical Medicine and Rehabilitation—3(g)
Ottawa	
Ottawa Civic Hospital	Anæsthesia—3 Internal Medicine—4 Obstetrics and Gynæcology—3 Pædiatrics—3, Pathology—8 Radiology (Diagnostic)—8 Radiology (Therapeutic)—8 Surgery (General)—3, Urology—3
Ottawa General Hospital	Internal Medicine—4(b) Obstetrics and Gynæcology—4(a) Pædiatrics—4(b), Pathology—4(c) Psychiatry—7(e) Surgery (General)—5(b)
St. Thomas	
Ontario Hospital	Psychiatry—3(g)
Toronto	
Central Laboratory	Pathology—3(g)
Grace Hospital	Obstetrics and Gynæcology—3

	Approved for Training In:
Hospital for Sick Children	Anæsthesia—3, Bacteriology—3(g) Dermatology—2(d), Neurology—3(g) Neurosurgery—3, Ophthalmology—2(d) Orthopædic Surgery—3 Otolaryngology—2(d) Pædiatrics—8, Pathology—3(g) Plastic Surgery—3(d) Psychiatry—3(g) Radiology (Diagnostic)—3(g) Surgery (General)—3(g) Urology—2(a)
New Mount Sinai Hospital	Anæsthesia—3(a) Internal Medicine—3(f) Obstetrics and Gynæcology—3(d) Pathology—3(d), Pædiatrics—3(g) Radiology (Diagnostic)—3(g) Surgery (General)—3(a)
Ontario Hospital, 999 Queen St. West	Psychiatry—3(k)
St. Joseph's Hospital	Anæsthesia—3 Internal Medicine—3 Obstetrics and Gynæcology—3 Orthopædic Surgery—3 Pædiatrics—3, Pathology—3 Radiology (Diagnostic)—3 Surgery (General)—3
St. Michael's Hospital	Anæsthesia—8, Bacteriology—8 Internal Medicine—8 Neurosurgery—3(a) Obstetrics and Gynæcology—8 Ophthalmology—8, Otolaryngology—8 Pathology—8 Plastic Surgery—3(a) Radiology (Diagnostic)—8 Radiology (Therapeutic)—3 Surgery (General)—8, Urology—8
Sunnybrook Hospital (D.V.A.)	Anæsthesia—5 and 6 Bacteriology—5 and 6 Dermatology—3 and 6 Internal Medicine—5 and 6 Neurology—5 and 6 Ophthalmology—5 and 6 Orthopædic Surgery—5 and 6 Otolaryngology—5 and 6 Pathology—5 and 6 Physical Medicine and Rehabilitation—3 and 6 Plastic Surgery—5 and 6 Psychiatry—5 and 6 Radiology (Diagnostic)—5 and 6 Surgery (General)—5 and 6 Urology—5 and 6
Toronto East General and Orthopædic Hospital	Anæsthesia—8, Bacteriology—3 Internal Medicine—3 Obstetrics and Gynæcology—3 Pathology—3 Radiology (Diagnostic)—3 Surgery (General)—3
Toronto General Hospital	Anæsthesia—8, Bacteriology—8 Dermatology—8 Internal Medicine—8 Neurology—8, Neurosurgery—8 Obstetrics and Gynæcology—8 Ophthalmology—8 Orthopædic Surgery—8 Otolaryngology—8, Pathology—8 Physical Medicine and Rehabilitation—8 Plastic Surgery—8 Radiology (Diagnostic)—8 Radiology (Therapeutic)—8 Surgery (General)—8 Thoracic Surgery—8, Urology—8
Toronto Military Hospital	Internal Medicine—3(g) Surgery (General)—3(g)
Toronto Psychiatric Hospital	Psychiatry—8
Toronto Western Hospital	Anæsthesia—8 Internal Medicine—8 Obstetrics and Gynæcology—8 Ophthalmology—8 Orthopædic Surgery—3(c) Otolaryngology—8, Pathology—8 Physical Medicine and Rehabilitation—3(a) Radiology (Diagnostic)—8 Radiology (Therapeutic)—3 Surgery (General)—8, Urology—8
Women's College Hospital	Anæsthesia—3(a), Bacteriology—3 Internal Medicine—3(e) Obstetrics and Gynæcology—4(o) Pathology—3(m)
Weston	
Toronto Hospital for Tuberculosis	Anæsthesia—3, Bacteriology—2 Internal Medicine—3(g) Orthopædic Surgery—2 Pathology—2, Surgery (General)—2(d) Thoracic Surgery—3
Windsor	
Metropolitan General Hospital	Pathology—8 Radiology (Therapeutic)—4(d)
PROVINCE OF QUEBEC	
Chicoutimi	
Hôtel-Dieu St-Vallier	Internal Medicine—4 Orthopædic Surgery—3 Radiology (Diagnostic)—3 Surgery (General)—4
Mastaï	
Hôpital St-Michel-Archange et la Clinique Roy-Rousseau	Psychiatry—8
Montreal	
Hôpital Maisonneuve	Anæsthesia—3, Gynæcology—3(a) Internal Medicine—5(b) Obstetrics—3(a), Ophthalmology—3(a) Pædiatrics—3(a), Pathology—3(d) Psychiatry—3(a) Radiology (Diagnostic)—3 Surgery (General)—8
Hôpital Notre-Dame	Anæsthesia—8, Bacteriology—8 Dermatology—8 Internal Medicine—8 Neurology—8, Neurosurgery—8 Obstetrics and Gynæcology—8 Ophthalmology—8 Orthopædic Surgery—3 Otolaryngology—8 Pædiatrics—8, Pathology—8 Plastic Surgery—8, Psychiatry—2 Radiology (Diagnostic)—8 Radiology (Therapeutic)—8 Surgery (General)—8 Thoracic Surgery—3(a), Urology—8
Hôpital Pasteur	Pædiatrics—2 Physical Medicine and Rehabilitation—7(c)
Hôpital du Sacré-Cœur	Anæsthesia—3(a) Internal Medicine—3(g) Orthopædic Surgery—8 Thoracic Surgery—3(g)
Hôpital St-Jean-de-Dieu	Psychiatry—3(k)
Hôpital Ste-Jeanne-d'Arc	Radiology (Diagnostic)—3(a) Radiology (Therapeutic)—3(a)
Hôpital Sainte-Justine	Anæsthesia—3(g), Bacteriology—3(g) Neurology—3(g), Obstetrics—4(n) Orthopædic Surgery—3 Otolaryngology—3(g), Pædiatrics—8 Pathology—3(g) Plastic Surgery—3(g)

	Approved for Training In:
	Psychiatry—3(g)
	Radiology (Diagnostic)—3(g)
	Surgery (General)—3(g)
	Thoracic Surgery—3(g)
Hôpital Saint-Luc	Anæsthesia—2(b)
	Internal Medicine—4
	Orthopædic Surgery—4
	Otolaryngology—3, Pathology—4
	Radiology (Diagnostic)—4(e)
	Radiology (Therapeutic)—3
	Surgery (General)—4
Hôtel-Dieu de Montréal	Anæsthesia—8, Bacteriology—8
	Dermatology—8, Gynæcology—8
	Internal Medicine—8
	Neurology—8, Neurosurgery—3(a)
	Ophthalmology—8
	Orthopædic Surgery—3(a)
	Otolaryngology—8, Pathology—8
	Plastic Surgery—3(a)
	Psychiatry—8
	Radiology (Diagnostic)—8
	Radiology (Therapeutic)—8
	Surgery (General)—8
	Thoracic Surgery—3(a)
	Urology—8
Institut Albert Prévost	Psychiatry—3
Institut de Cardiologie de Montréal	Internal Medicine—3(g)
	Thoracic Surgery—3(g)
Institut du Radium	Radiology (Diagnostic)—3
	Radiology (Therapeutic)—8
Jewish General Hospital	Internal Medicine—5(c)
	Obstetrics and Gynæcology—4(g)
	Pædiatrics—2(a), Pathology—4
	Radiology (Diagnostic)—3(a)
	Radiology (Therapeutic)—3(a)
	Surgery (General)—4(f)
	Urology—3(a)
Montreal Children's Hospital	Anæsthesia—3, Bacteriology—3(g)
	Neurology—3(g)
	Orthopædic Surgery—3
	Otolaryngology—2(d)
	Pædiatrics—8, Pathology—3(g)
	Plastic Surgery—3(g)
	Psychiatry—3(g)
	Radiology (Diagnostic)—3(g)
	Surgery (General)—3(g)
	Thoracic Surgery—2(d)
	Urology—2(d)
Montreal General Hospital	Anæsthesia—8, Bacteriology—8
	Dermatology—8, Gynæcology—8
	Internal Medicine—8
	Neurology—8, Obstetrics—3
	Ophthalmology—8
	Orthopædic Surgery—8
	Otolaryngology—8, Pathology—8
	Physical Medicine and Rehabilitation—8
	Plastic Surgery—8
	Radiology (Diagnostic)—8
	Radiology (Therapeutic)—8
	Surgery (General)—8, Urology—8
Montreal Neurological Institute	Anæsthesia—3, Neurology—8
	Neurosurgery—8
	Radiology (Diagnostic)—3
Queen Elizabeth Hospital	Anæsthesia—3, Pathology—3(a)
	Radiology (Diagnostic)—4(d)
	Radiology (Therapeutic)—3
Queen Mary Veterans' Hospital (D.V.A.)	Anæsthesia—5 and 6
	Bacteriology—5 and 6
	Dermatology—3 and 6
	Internal Medicine—5 and 6
	Neurology—3 and 6
	Neurosurgery—5 and 6
	Ophthalmology—5 and 6
	Orthopædic Surgery—5 and 6
	Otolaryngology—5 and 6
	Pathology—5 and 6
	Physical Medicine and Rehabilitation—3 and 6
	Plastic Surgery—5 and 6
	Psychiatry—5 and 6
	Radiology (Diagnostic)—5 and 6
	Surgery (General)—5 and 6
	Thoracic Surgery—5 and 6
	Urology—5 and 6
Reddy Memorial Hospital	Anæsthesia—3
	Obstetrics and Gynæcology—3
	Pathology—3
	Radiology (Diagnostic)—3
	Surgery (General)—3(a)
Rehabilitation Centre	Physical Medicine and Rehabilitation—7(c)
Royal Edward Laurentian Hospital (Montreal and Laurentian Division)	Internal Medicine—3(g)
	Thoracic Surgery—3
Royal Victoria Hospital	Anæsthesia—8, Bacteriology—8
	Dermatology—8
	Internal Medicine—8
	Obstetrics and Gynæcology—8
	Ophthalmology—8
	Orthopædic Surgery—8
	Otolaryngology—8, Pædiatrics—8
	Pathology—8, Plastic Surgery—8
	Psychiatry—8
	Radiology (Diagnostic)—8
	Radiology (Therapeutic)—8
	Surgery (General)—8
	Thoracic Surgery—8, Urology—8
Shriners' Hospital for Crippled Children	Orthopædic Surgery—3(d)
St. Mary's Hospital	Anæsthesia—3
	Internal Medicine—3(d)
	Obstetrics and Gynæcology—3(a)
	Pathology—3(d)
	Radiology (Diagnostic)—3
	Surgery (General)—3(d)
Quebec	
Hôpital de l'Enfant-Jésus	Anæsthesia—8, Bacteriology—8
	Dermatology—8
	Internal Medicine—8
	Neurology—8, Neurosurgery—8
	Obstetrics and Gynæcology—3
	Orthopædic Surgery—8
	Pædiatrics—8, Pathology—3
	Radiology (Diagnostic)—8
	Radiology (Therapeutic)—8
	Surgery (General)—8
Hôpital Laval	Anæsthesia—3
	Internal Medicine—3(g)
	Pathology—3(l)
	Thoracic Surgery—3(g)
Hôpital de la Miséricorde	Obstetrics—3(d)
Hôpital du Saint-Sacrement	Anæsthesia—8, Bacteriology—8
	Dermatology—8
	Internal Medicine—8
	Obstetrics and Gynæcology—8
	Ophthalmology—8, Otolaryngology—8
	Pædiatrics—8, Pathology—8
	Radiology (Diagnostic)—8
	Radiology (Therapeutic)—8
	Surgery (General)—8
Hôpital Ste-Foy (D.V.A.)	Internal Medicine—5 and 6
	Radiology (Diagnostic)—3 and 6
	Surgery (General)—5 and 6
Hôpital St-François d'Assise	Anæsthesia—3
	Internal Medicine—3
	Obstetrics—3
	Ophthalmology—3, Otolaryngology—3
	Radiology (Diagnostic)—3
	Radiology (Therapeutic)—3
	Surgery (General)—3
Hôtel-Dieu de Québec	Anæsthesia—8, Dermatology—8
	Gynæcology—8
	Internal Medicine—8
	Ophthalmology—8
	Orthopædic Surgery—3
	Otolaryngology—8
	Pædiatrics—8, Pathology—8
	Radiology (Diagnostic)—8
	Radiology (Therapeutic)—8
	Surgery (General)—8, Urology—3

	Approved for Training In:
Ste-Anne-de-Bellevue	
Ste. Anne's Hospital (D.V.A.)	Internal Medicine—5 and 6 Psychiatry—5 and 6
Sherbrooke	
Hôpital Général St-Vincent-de-Paul	Anæsthesia—3(a) Internal Medicine—3(c) Pathology—3 Radiology (Diagnostic)—3 Surgery (General)—3(e)
Verdun	
Hôpital Général de Verdun	Anæsthesia—3(a) Internal Medicine—4(b) Orthopædic Surgery—4(a) Pædiatrics—4(a), Pathology—3 Radiology (Diagnostic)—3(a) Surgery (General)—4(a)
Verdun Protestant Hospital	Psychiatry—3
Ville St-Laurent	
Hôpital Notre-Dame-de-l'Espérance	Anæsthesia—3(g)

PROVINCE OF SASKATCHEWAN

North Battleford	
Saskatchewan Hospital	Psychiatry—3(j)
Regina	
Allan Blair Memorial Clinic (situated in the Regina Grey Nuns' Hospital)	Radiology (Therapeutic)—4(d)
Regina General Hospital	Anæsthesia—3 Internal Medicine—3(i) Obstetrics and Gynæcology—3(n) Pædiatrics—3(i), Pathology—3(i) Psychiatry—3(g) Radiology (Diagnostic)—4(d)
Regina Grey Nuns' Hospital	Pathology—3 Radiology (Diagnostic)—4(d)
Saskatoon	
St. Paul's Hospital	Internal Medicine—3 Pathology—3 Radiology (Diagnostic)—4(e) Radiology (Therapeutic)—4(e) Surgery (General)—3(a)
Saskatoon Cancer Clinic (situated in the University Hospital)	Radiology (Therapeutic)—8
Saskatoon City Hospital	Internal Medicine—3(o) Pathology—4 Radiology (Diagnostic)—4 Surgery (General)—3(o)
University Hospital	Anæsthesia—8, Bacteriology—4(l) Internal Medicine—8 Neurology—4(a) Neurosurgery—4(m), Ophthalmology—3 Obstetrics and Gynæcology—8 Orthopædic Surgery—8 Pædiatrics—3 Pathology—8 Physical Medicine and Rehabilitation—8 Psychiatry—8 Radiology (Diagnostic)—8 Surgery (General)—8 Thoracic Surgery—8, Urology—8
Weyburn	
Saskatchewan Hospital	Psychiatry—3(j)

SPECIALTY OF ANÆSTHESIA

Calgary General Hospital—3	Calgary, Alberta
Edmonton General Hospital—3	Edmonton, Alberta
Royal Alexandra Hospital—4(j)	" "
University of Alberta Hospital—8	" "
Royal Columbia Hospital—3	New Westminster, B.C.
St. Paul's Hospital—3	Vancouver, B.C.
St. Vincent's Hospital—2(b)	" "
Shaughnessy Hospital (D.V.A.)—5 and 6	" "
Vancouver General Hospital—8	" "
St. Boniface Hospital—4(b)	St. Boniface, Man.
Children's Hospital—3(o)	Winnipeg, Manitoba
Deer Lodge Hospital (D.V.A.)—5 and 6	" "
Winnipeg General Hospital—8	" "
Saint John General Hospital—3(j)	Saint John, N.B.
St. John's General Hospital—3	St. John's, Nfld.
Camp Hill Hospital (D.V.A.)—3 and 6	Halifax, Nova Scotia
The Children's Hospital—1	" " "
Victoria General Hospital—8	" " "
Hamilton General Hospital—4	Hamilton, Ontario
St. Joseph's Hospital—3	" "
Hotel-Dieu Hospital—3	Kingston, Ontario
Kingston General Hospital—8	" "
St. Joseph's Hospital—3(k)	London, Ontario
Victoria Hospital—8	" "
Westminster Hospital (D.V.A.)—5 and 6	" "
Ottawa Civic Hospital—3	Ottawa, Ontario
Hospital for Sick Children—3	Toronto, Ontario
New Mount Sinai Hospital—3(a)	" "
St. Joseph's Hospital—3	" "
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto East General and Orthopædic Hospital—8	" "
Toronto General Hospital—8	" "
Toronto Western Hospital—8	" "
Women's College Hospital—3(a)	" "
Toronto Hospital for Tuberculosis—3	Weston, Ontario
Hôpital du Sacré-Cœur—3(a)	Montreal, Quebec
Hôpital Maisonneuve—3	" "
Hôpital Notre-Dame—8	" "
Hôpital Saint-Luc—2(b)	" "
Hôpital Sainte-Justine—3(g)	" "
Hôtel-Dieu de Montréal—8	" "
Montreal Children's Hospital—3	" "
Montreal General Hospital—8	" "
Montreal Neurological Institute—3	" "
Queen Elizabeth Hospital—3	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Reddy Memorial Hospital—3	" "
Royal Victoria Hospital—8	" "
St. Mary's Hospital—3	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
L'Hôpital Laval—3	" "
Hôpital du Saint-Sacrement—8	" "
Hôpital St-François-d'Assise—3	" "
L'Hôtel-Dieu de Québec—8	" "
Hôpital Général St-Vincent-de-Paul—3(a)	Sherbrooke, Quebec
Hôpital Général de Verdun—3(a)	Verdun, Quebec
Hôpital Notre-Dame-de-l'Espérance—3(g)	Ville St-Laurent, Quebec
Regina General Hospital—3	Regina, Sask.
University Hospital—8	Saskatoon, Sask.

SPECIALTY OF BACTERIOLOGY

University of Alberta Hospital—8	Edmonton, Alberta
Vancouver General Hospital—8	Vancouver, B.C.
Winnipeg General Hospital—4(g)	Winnipeg, Manitoba
St. John's General Hospital—3(c)	St. John's, Nfld.
Victoria General Hospital—8	Halifax, Nova Scotia
Mountain Sanatorium—2	Hamilton, Ontario
Kingston General Hospital—8	Kingston, Ontario
Hospital for Sick Children—3(g)	Toronto, Ontario
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto East General and Orthopædic Hospital—3	" "
Toronto General Hospital—8	" "
Women's College Hospital—3	" "
Toronto Hospital for Tuberculosis—2	Weston, Ontario
Hôpital Notre-Dame—8	Montreal, Quebec
Hôpital Sainte-Justine—3(g)	" "
Hôtel-Dieu de Montréal—8	" "
Montreal Children's Hospital—8	" "
Montreal General Hospital—8	" "

Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Victoria Hospital—8	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
University Hospital—4(l)	Saskatoon, Sask.

SPECIALTY OF DERMATOLOGY

Hospital for Sick Children—2(d)	Toronto, Ontario
Sunnybrook Hospital (D.V.A.)—3 and 6	" "
Toronto General Hospital—8	" "
Hôpital Notre-Dame—8	Montreal, Quebec
Hôtel-Dieu de Montréal—8	" "
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—3 and 6	" "
Royal Victoria Hospital—8	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
L'Hôtel-Dieu de Québec—8	" "

SPECIALTY OF INTERNAL MEDICINE

Baker Memorial Sanatorium—3(g)	Calgary, Alberta
Colonel Belcher Hospital (D.V.A.)—3 and 6	" "
Aberhart Memorial Sanatorium—3(g)	Edmonton, Alberta
Charles Camsell Indian Hospital—3(g)	" "
Edmonton General Hospital—3	" "
Misericordia Hospital—3(a)	" "
Royal Alexandra Hospital—3	" "
University of Alberta Hospital—8	" "
St. Paul's Hospital—3(d)	Vancouver, B.C.
Shaughnessy Hospital (D.V.A.)—5 and 6	" "
Vancouver General Hospital—8	" "
Vancouver Unit, Division of Tuberculosis Control—3(g)	" "
Victoria Veterans' Hospital (D.V.A.)—3 and 6	Victoria, B.C.
Manitoba Sanatorium—3(g)	Ninette, Manitoba
St. Boniface Hospital—4	St. Boniface, Man.
St. Boniface Sanatorium—3(g)	St. Vital, Manitoba
Deer Lodge Hospital (D.V.A.)—5 and 6	Winnipeg, Manitoba
Winnipeg Clinic—3(g)	" "
Winnipeg General Hospital—8	" "
Lancaster Hospital (D.V.A.)—3 and 6	Saint John, N.B.
Saint John General Hospital—3(j)	" "
St. John's General Hospital—3(c)	St. John's, Nfld.
Camp Hill Hospital (D.V.A.)—5 and 6	Halifax, Nova Scotia
Halifax Tuberculosis Hospital—3(g)	" " "
Victoria General Hospital—8	" " "
Nova Scotia Sanatorium—3(g)	Kentville, N.S.
Point Edward Hospital—2(e)	Sydney, "
Kingston Military Hospital—3(c)	Barriefield, Ontario
Hamilton General Hospital—3	Hamilton, Ontario
Mountain Sanatorium—3(g)	" "
Hotel-Dieu Hospital—3(a)	Kingston, Ontario
Kingston General Hospital—8	" "
Beck Memorial Sanatorium—3(g)	London, Ontario
St. Joseph's Hospital—3	" "
Victoria Hospital—8	" "
Westminster Hospital (D.V.A.)—5 and 6	" "
Ottawa Civic Hospital—4	Ottawa, Ontario
Ottawa General Hospital—4(b)	" "
New Mount Sinai Hospital—3(f)	Toronto, Ontario
St. Joseph's Hospital—3	" "
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto East General and Orthopædic Hospital—3	" "
Toronto General Hospital—8	" "
Toronto Military Hospital—3(g)	" "
Toronto Western Hospital—8	" "
Women's College Hospital—3(e)	" "
Toronto Hospital for Tuberculosis—3(g)	Weston, Ontario
Hôtel-Dieu St-Vallier—4	Chicoutimi, Quebec
Hôpital du Sacré-Cœur—3(g)	Montreal, Quebec
Hôpital Maisonneuve—5(b)	" "
Hôpital Notre-Dame—8	" "
Hôpital Saint-Luc—4	" "
Hôtel-Dieu de Montréal—8	" "
Institut de Cardiologie de Montréal—3(g)	" "
Jewish General Hospital—5(c)	" "
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Edward Laurentian Hospital—3(g) (Montreal and Laurentian Divisions)	Montreal and Ste-Agathe-des-Monts, Quebec
Royal Victoria Hospital—3(d)	Montreal, Quebec
St. Mary's Hospital—3(d)	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
L'Hôpital Laval—3(g)	" "
Hôpital St-François-d'Assise—3	" "
Hôpital Ste-Foy (D.V.A.)—5 and 6	" "
L'Hôtel-Dieu de Québec—8	" "
Ste. Anne's Hospital (D.V.A.)—5 and 6	Ste-Anne-de-Bellevue, Quebec
Hôpital Général St-Vincent-de-Paul—3(c)	Sherbrooke, Quebec
Hôpital Général de Verdun—4(b)	Verdun, Quebec
Regina General Hospital—3(i)	Regina, Sask.
St. Paul's Hospital—3	Saskatoon, Sask.
Saskatoon City Hospital—3(o)	" "
University Hospital—8	" "

SPECIALTY OF NEUROLOGY

Hospital for Sick Children—3(g)	Toronto, Ontario
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto General Hospital—8	" "
Hôpital Notre-Dame—8	Montreal, Quebec
Hôpital Sainte-Justine—3(g)	" "
Hôtel-Dieu de Montréal—8	" "
Montreal Children's Hospital—3(g)	" "
Montreal General Hospital—8	" "
Montreal Neurological Institute—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—3 and 6	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
University Hospital—4(a)	Saskatoon, Sask.

SPECIALTY OF NEUROSURGERY

University of Alberta Hospital—8	Edmonton, Alberta
Deer Lodge Hospital (D.V.A.)—5 and 6	Winnipeg, Manitoba
Winnipeg General Hospital—3(a)	" "
Victoria General Hospital—3	Halifax, Nova Scotia
Hospital for Sick Children—3	Toronto, Ontario
St. Michael's Hospital—3(a)	" "
Toronto General Hospital—8	" "
Hôpital Notre-Dame—8	Montreal, Quebec
Hôtel-Dieu de Montréal—3(a)	" "
Montreal Neurological Institute—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
University Hospital—4(m)	Saskatoon, Sask.

SPECIALTY OF OBSTETRICS AND GYNÆCOLOGY

Royal Alexandra Hospital—4(b)	Edmonton, Alberta
University of Alberta Hospital—8	" "
St. Paul's Hospital—3(d)	Vancouver, B.C.
Vancouver General Hospital—8	" "
St. Boniface Hospital—3(a)	St. Boniface, Man.
Winnipeg General Hospital—8	Winnipeg, Man.
Saint John General Hospital—3(j)	Saint John, N.B.
Hamilton General Hospital—3	Hamilton, Ontario
Hotel-Dieu Hospital—3(a)	Kingston, Ontario
Kingston General Hospital—8	" "
St. Joseph's Hospital—3	London, Ontario
Victoria Hospital—8	" "
Ottawa Civic Hospital—3	Ottawa, Ontario
Ottawa General Hospital—4(a)	" "
Grace Hospital—3	Toronto, Ontario
New Mount Sinai Hospital—3(d)	" "
St. Joseph's Hospital—3	" "
St. Michael's Hospital—8	" "
Toronto East General and Orthopædic Hospital—3	" "
Toronto General Hospital—8	" "
Toronto Western Hospital—8	" "
Women's College Hospital—4(o)	" "

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Hôpital Notre-Dame—8	Montreal, Quebec
Jewish General Hospital—4(g)	" "
Reddy Memorial Hospital—3	" "
Royal Victoria Hospital—8	" "
St. Mary's Hospital—3(a)	" "
Hôpital de l'Enfant-Jésus—3	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
Regina General Hospital—3(n)	Regina, Sask.
University Hospital—8	Saskatoon, Sask.

SPECIALTY OF OBSTETRICS

Salvation Army Grace Hospital—3(d)	Winnipeg, Manitoba
Grace Maternity Hospital—8	Halifax, Nova Scotia
Hôpital Maisonneuve—3(a)	Montreal, Quebec
Hôpital Sainte-Justine—4(n)	" "
Montreal General Hospital—3	" "
Hôpital de la Miséricorde—3(d)	Quebec, Quebec
Hôpital St-François d'Assise—3	" "

SPECIALTY OF GYNÆCOLOGY

Victoria General Hospital—8	Halifax, Nova Scotia
Hôpital Maisonneuve—3(a)	Montreal, Quebec
Hôtel-Dieu de Montréal—8	" "
Montreal General Hospital—8	" "
Hôtel-Dieu de Québec—8	Quebec, Quebec

SPECIALTY OF OPHTHALMOLOGY

University of Alberta Hospital—8	Edmonton, Alberta
Shaughnessy Hospital (D.V.A.)—3(g) and 6	Vancouver, B.C.
Vancouver General Hospital—8	" "
Winnipeg General Hospital—3(a)	Winnipeg, Manitoba
Saint John General Hospital—3(j)	Saint John, N.B.
Hospital for Sick Children—2(d)	Toronto, Ontario
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto General Hospital—8	" "
Toronto Western Hospital—8	" "
Hôpital Maisonneuve—3(a)	Montreal, Quebec
Hôpital Notre-Dame—8	" "
Hôtel-Dieu de Montréal—8	" "
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Victoria Hospital—8	" "
Hôpital St-François d'Assise—3	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
Hôtel-Dieu de Québec—8	" "
University Hospital—3	Saskatoon, Sask.

SPECIALTY OF ORTHOPÆDIC SURGERY

Royal Alexandra Hospital—3(a)	Edmonton, Alberta
University of Alberta Hospital—8	" "
Children's Hospital—2	Vancouver, B.C.
Shaughnessy Hospital (D.V.A.)—5 and 6	" "
Vancouver General Hospital—8	" "
Deer Lodge Hospital (D.V.A.)—5 and 6	Winnipeg, Manitoba
Shriners' Hospital for Crippled Children (Winnipeg Unit)—2(b)	" "
Winnipeg General Hospital—5	" "
Hospital for Sick Children—3	Toronto, Ontario
St. Joseph's Hospital—3	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto General Hospital—8	" "
Toronto Western Hospital—3(c)	" "
Toronto Hospital for Tuberculosis—2	Weston, Ontario
Hôtel-Dieu St-Vallier—3	Chicoutimi, Quebec
Hôpital Notre-Dame—3	Montreal, Quebec
Hôpital du Sacré-Cœur—8	" "
Hôpital Saint-Luc—4	" "
Hôpital Sainte-Justine—3	" "
Hôtel-Dieu de Montréal—3(a)	" "
Montreal Children's Hospital—3	" "
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Victoria Hospital—8	" "
Shriners' Hospital for Crippled Children—3(d)	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
Hôtel-Dieu de Québec—3	" "
Hôpital Général de Verdun—4(a)	Verdun, Quebec
University Hospital—8	Saskatoon, Sask.

SPECIALTY OF OTOLARYNGOLOGY

University of Alberta Hospital—8	Edmonton, Alberta
Shaughnessy Hospital (D.V.A.)—3(g) and 6	Vancouver, B.C.
Vancouver General Hospital—8	" "
Saint John General Hospital—3(j)	Saint John, N.B.
Hospital for Sick Children—2(d)	Toronto, Ontario
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto General Hospital—8	" "
Toronto Western Hospital—8	" "
Hôpital Notre-Dame—8	Montreal, Quebec
Hôpital Saint-Luc—3	" "
Hôpital Sainte-Justine—3(g)	" "
Hôtel-Dieu de Montréal—8	" "
Montreal Children's Hospital—2(c)	" "
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Victoria Hospital—8	" "
Hôpital St-François d'Assise—3	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
Hôtel-Dieu de Québec—8	" "

SPECIALTY OF PÆDIATRICS

Royal Alexandra Hospital—3	Edmonton, Alberta
University of Alberta Hospital—4	" "
Children's Hospital—2	Vancouver, B.C.
St. Paul's Hospital—3	" "
Vancouver General Hospital—8	" "
St. Boniface Hospital—3(d)	St. Boniface, Man.
Children's Hospital—8	Winnipeg, Manitoba
Winnipeg General Hospital—2(d)	" "
Saint John General Hospital—3	Saint John, N.B.
Children's Hospital—4	Halifax, Nova Scotia
Hamilton General Hospital—3	Hamilton, Ontario
Kingston General Hospital—3	Kingston, Ontario
Victoria Hospital—4	London, Ontario
Ottawa Civic Hospital—3	Ottawa, Ontario
Ottawa General Hospital—4(b)	" "
Hospital for Sick Children—8	Toronto, Ontario
New Mount Sinai Hospital—3(g)	" "
St. Joseph's Hospital—3	" "
Hôpital Maisonneuve—3(a)	Montreal, Quebec
Hôpital Notre-Dame—8	" "
Hôpital Pasteur—2	" "
Hôpital Sainte-Justine—8	" "
Jewish General Hospital—2(a)	" "
Montreal Children's Hospital—8	" "
Royal Victoria Hospital—8	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
Hôtel-Dieu de Québec—8	" "
Hôpital Général de Verdun—4(a)	Verdun, Quebec
Regina General Hospital—3(i)	Regina, Sask.
University Hospital—3	Saskatoon, Sask.

SPECIALTY OF PATHOLOGY

Calgary General Hospital—3(a)	Calgary, Alberta
Holy Cross Hospital—3(a)	" "
Provincial Laboratory of Public Health (Southern Branch)—3(k)	" "
Edmonton General Hospital—4	Edmonton, Alberta
Misericordia Hospital—3(a)	" "
Royal Alexandra Hospital—4	" "
University of Alberta Hospital—8	" "
St. Michael's General Hospital—3	Lethbridge, Alberta
Royal Columbian Hospital—3(d)	New Westminster, British Columbia
Shaughnessy Hospital (D.V.A.)—5 and 6	Vancouver, B.C.
St. Paul's Hospital—3	" "
Vancouver General Hospital—8	" "
Royal Jubilee Hospital—3	Victoria, B.C.
St. Boniface Hospital—4	St. Boniface, Man.
Children's Hospital—3(g)	Winnipeg, Manitoba
Deer Lodge Hospital (D.V.A.)—5 and 6	" "
Winnipeg General Hospital—8	" "
Lancaster Hospital (D.V.A.)—2 and 6	Saint John, N.B.

Saint John General Hospital—4(a)	Saint John, N.B.
St. John's General Hospital—3	St. John's, Nfld.
Camp Hill Hospital (D.V.A.)—3(l) and 6	Halifax, Nova Scotia
Victoria General Hospital—8	" " "
Regional Laboratory—3(g)	Fort William, Ont.
Hamilton General Hospital—4	Hamilton, Ontario
Mountain Sanatorium—2	" "
St. Joseph's Hospital—3	" "
Hotel-Dieu Hospital—3	Kingston, Ontario
Kingston General Hospital—8	" "
Regional Laboratory—3(g)	London, Ontario
Victoria Hospital—8	" "
Westminster Hospital (D.V.A.)—3 and 6	" "
Ottawa Civic Hospital—8	Ottawa, Ontario
Ottawa General Hospital—4(c)	" "
Central Laboratory—3(g)	Toronto, Ontario
Hospital for Sick Children—3(g)	" "
New Mount Sinai Hospital—3(d)	" "
St. Joseph's Hospital—3	" "
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto East General and Orthopædic Hospital—3	" "
Toronto General Hospital—8	" "
Toronto Western Hospital—8	" "
Women's College Hospital—3(m)	" "
Toronto Hospital for Tuberculosis—2	Weston, Ontario
Metropolitan General Hospital—8	Windsor, Ontario
Hôpital Maisonneuve—3(d)	Montreal, Quebec
Hôpital Notre-Dame—8	" "
Hôpital Saint-Luc—4	" "
Hôpital Sainte-Justine—3(g)	" "
Hôtel-Dieu de Montréal—8	" "
Jewish General Hospital—4	" "
Montreal Children's Hospital—3(g)	" "
Montreal General Hospital—8	" "
Queen Elizabeth Hospital—3(a)	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Reddy Memorial Hospital—3	" "
Royal Victoria Hospital—8	" "
St. Mary's Hospital—3(d)	" "
Hôpital Laval—3(l)	Quebec, Quebec
Hôpital de l'Enfant-Jésus—3	" "
Hôpital du Saint-Sacrement—8	" "
Hôtel-Dieu de Québec—8	" "
Hôpital Général St-Vincent-de-Paul—3	Sherbrooke, Quebec
Hôpital Général de Verdun—3	Verdun, Quebec
Regina General Hospital—3(i)	Regina, Sask.
Regina Grey Nun's Hospital—3	" "
Saskatoon City Hospital—4	Saskatoon, Sask.
St. Paul's Hospital—3	" "
University Hospital—8	" "

SPECIALTY OF PHYSICAL MEDICINE AND REHABILITATION

Workmen's Compensation Board Rehabilitation Clinic—3(a)	Edmonton, Alberta
Rehabilitation Centre—Western Society for Rehabilitation—3	Vancouver, B.C.
Group Approval—five hospitals—7(b)	London, Ontario
Victoria Hospital—7(b)	" "
Westminster Hospital (D.V.A.)—7(b) and 6	" "
Rehabilitation Centre Workmen's Compensation Board—3(g)	Malton, Ontario
Sunnybrook Hospital (D.V.A.)—3 and 6	Toronto, Ontario
Toronto General Hospital—8	" "
Toronto Western Hospital—3(a)	" "
Hôpital Pasteur—7(c)	Montreal, Quebec
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—3 and 6	" "
Rehabilitation Centre—7(c)	" "
University Hospital—8	Saskatoon, Sask.

SPECIALTY OF PLASTIC SURGERY

Hospital for Sick Children—3(d)	Toronto, Ontario
St. Michael's Hospital—3(a)	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	Toronto, Ontario
Toronto General Hospital—8	" "
Hôpital Notre-Dame—8	Montreal, Quebec
Hôpital Sainte-Justine—3(g)	" "
Hôtel-Dieu de Montréal—3(a)	" "
Montreal Children's Hospital—3(g)	" "
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Victoria Hospital—8	" "

SPECIALTY OF PSYCHIATRY

The policy of the College relative to granting approval to hospitals for advanced graduate training in Psychiatry has been revised and approval will now be given to hospitals only when their training program is organized under university or similar auspices. The deans of medical schools across Canada are aware of these new requirements and have been asked to assist psychiatric hospitals and clinics in reorganizing their training programs.

The four-year period of training in Psychiatry is being organized as an integrated whole by those persons responsible for Psychiatry in the various provinces. No one hospital or institution will serve the objective, but rather a series of appointments in a variety of hospitals, clinics and other settings will be required.

Enquiries regarding the status of a specific hospital should be directed to the College Office, but in the interim period while training programs are being arranged, the approval to the following hospitals remains unchanged:

University of Alberta Hospital—3	Edmonton, Alberta
Provincial Mental Hospital—3	Ponoka, Alberta
Provincial Mental Hospital—3	Essondale, B.C.
Shaughnessy Hospital (D.V.A.)—5 and 6	Vancouver, B.C.
Vancouver General Hospital—3(a)	" "
Hospital for Mental Diseases—3	Brandon, Manitoba
Hospital for Mental Diseases—3	Selkirk, Manitoba
Deer Lodge Hospital (D.V.A.)—5 and 6	Winnipeg, Manitoba
Winnipeg Psychopathic Hospital—8	" "
Provincial Hospital—3	Saint John (Lancaster), N.B.
Hospital for Mental and Nervous Diseases—3	St. John's, Nfld.
Nova Scotia Hospital—3	Dartmouth, N.S.
Camp Hill Hospital (D.V.A.)—3 and 6	Halifax, Nova Scotia
Children's Hospital—3	" " "
Victoria General Hospital—3	" " "
Ontario Hospital—3	Hamilton, Ontario
Ontario Hospital—3	Kingston, Ontario
Ontario Hospital—8	London, Ontario
St. Joseph's Hospital—3	" "
Victoria Hospital—3	" "
Westminster Hospital (D.V.A.) 5 and 6	" "
Ottawa General Hospital—7(c)	Ottawa, Ontario
Ontario Hospital—3(g)	St. Thomas, Ontario
Hospital for Sick Children—3(g)	Toronto, Ontario
Ontario Hospital, 999 Queen St. West—3(k)	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto Psychiatric Hospital—8	" "
Hôpital St-Michel-Archange et la Clinique Roy-Rousseau—8	Mastaï, Quebec
Hôpital Maisonneuve—3(a)	Montreal, Quebec
Hôpital Notre-Dame—2	" "
Hôpital St-Jean-de-Dieu—3(k)	" "
Hôpital Sainte-Justine—3(g)	" "
Hôtel-Dieu de Montréal—8	" "
Institut Albert Prévost—3	" "
Montreal Children's Hospital—3(g)	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Victoria Hospital—8	" "
Ste. Anne's Hospital (D.V.A.)—5 and 6	Ste-Anne-de-Bellevue, Quebec
Verdun Protestant Hospital—3	Verdun, Quebec
Saskatchewan Hospital—3(j)	North Battleford, Saskatchewan
Regina General Hospital—3(g)	Regina, Sask.
University Hospital—8	Saskatoon, Sask.
Saskatchewan Hospital—3(j)	Weyburn, Sask.

SPECIALTY OF DIAGNOSTIC RADIOLOGY

Calgary General Hospital—3	Calgary, Alberta
University of Alberta Hospital—8	Edmonton, Alberta
Royal Alexandra Hospital—3(d)	" "
Shaughnessy Hospital (D.V.A.)—5 and 6	Vancouver, B.C.
St. Paul's Hospital—4(e)	" "
Vancouver General Hospital—8	" "
Royal Jubilee Hospital—3	Victoria, B.C.
St. Boniface Hospital—4	St. Boniface, Man.
Deer Lodge Hospital (D.V.A.)—5 and 6	Winnipeg, Man.
Winnipeg General Hospital—8	" "
Moncton General Hospital—3(e)	Moncton, N.B.
Saint John General Hospital—4(d)	Saint John, N.B.
St. John's General Hospital—3(c)	St. John's, Nfld.
Camp Hill Hospital (D.V.A.)—7(a) and 6	Halifax, Nova Scotia
Children's Hospital—7(a)	" " "
Halifax Infirmary—7(a)	" " "
Halifax Tuberculosis Hospital—7(a)	" " "
Victoria General Hospital—8	" " "
Hamilton General Hospital—3	Hamilton, Ontario
Hotel-Dieu Hospital—3	Kingston, Ontario
Kingston General Hospital—8	" "
Kingston Military Hospital—3(k)	Kingston (Barrie-field), Ontario
St. Joseph's Hospital—3	London, Ontario
Victoria Hospital—8	" "
Westminster Hospital (D.V.A.)—3 and 6	" "
Ottawa Civic Hospital—8	Ottawa Ontario
Hospital for Sick Children—3(g)	Toronto, Ontario
New Mount Sinai Hospital—3(g)	" "
St. Joseph's Hospital—3	" "
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto East General and Orthopædic Hospital—3	" "
Toronto General Hospital—8	" "
Toronto Western Hospital—8	" "
Hôtel-Dieu St-Vallier—3	Chicoutimi, Quebec
Hôpital Maisonneuve—3	Montreal, Quebec
Hôpital Notre-Dame—8	" "
Hôpital Saint-Luc—4(e)	" "
Hôpital Sainte-Justine—3(g)	" "
Hôpital Ste-Jeanne-d'Arc—3(a)	" "
Hôtel-Dieu de Montréal—8	" "
Institut du Radium—3	" "
Jewish General Hospital—3(a)	" "
Montreal Children's Hospital—3(g)	" "
Montreal General Hospital—8	" "
Montreal Neurological Institute—3	" "
Queen Elizabeth Hospital—4(d)	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Reddy Memorial Hospital—3	" "
Royal Victoria Hospital—8	" "
St. Mary's Hospital—3	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
Hôpital Ste-Foy (D.V.A.)—3 and 6	" "
Hôpital Ste-François-d'Assise—3	" "
Hôtel-Dieu de Québec—8	" "
Postgraduate Course in Radiology under auspices of Laval University, ten hospitals—7(d)	" "
Hôpital Général St-Vincent-de-Paul—3	Sherbrooke, Quebec
Hôpital Général de Verdun—3(a)	Verdun, Quebec
Regina General Hospital—4(d)	Regina, Sask.
Regina Grey Nuns' Hospital—4(d)	" "
St. Paul's Hospital—4(e)	Saskatoon, Sask.
Saskatoon City Hospital—4	" "
University Hospital—8	" "

SPECIALTY OF THERAPEUTIC RADIOLOGY

University of Alberta Hospital—3	Edmonton, Alberta
British Columbia Cancer Institute—8	Vancouver, B.C.
St. Paul's Hospital—4(e)	" "
Royal Jubilee Hospital—4(d)	Victoria, B.C.
St. Boniface Hospital—4	St. Boniface, Man.
Winnipeg General Hospital—8	Winnipeg, Man.
Saint John General Hospital—3(j)	Saint John, N.B.
Victoria General Hospital—8	Halifax, Nova Scotia
Hamilton General Hospital—3	Hamilton, Ontario
Kingston General Hospital—8	Kingston, Ontario
Victoria Hospital—8	London, Ontario
Ottawa Civic Hospital—8	Ottawa, Ontario
St. Michael's Hospital—3	Toronto, Ontario
Toronto General Hospital—8	" "
Toronto Western Hospital—3	" "
Metropolitan General Hospital—4(d)	Windsor, Ontario
Hôpital Notre-Dame—8	Montreal, Quebec
Hôpital Saint-Luc—3	" "
Hôpital Sainte-Jeanne-d'Arc—3(a)	" "
Hôtel-Dieu de Montréal—8	" "
Institut du Radium—8	" "
Jewish General Hospital—3(a)	" "
Montreal General Hospital—8	" "
Queen Elizabeth Hospital—3	" "
Royal Victoria Hospital—8	" "
Hôpital de l'Enfant-Jésus—8	Quebec, Quebec
Hôpital du Saint-Sacrement—8	" "
Hôpital St-François-d'Assise—3	" "
L'Hôtel-Dieu de Québec—8	" "
Postgraduate Course in Radiology under auspices of Laval University, ten hospitals—7(d)	" "
Regina Grey Nuns' Hospital—4(d) (Allan Blair Memorial Clinic)	Regina, Sask.
Saskatoon Cancer Clinic—8 (Situated in University Hospital)	Saskatoon, Sask.
St. Paul's Hospital—4(e)	" "

SPECIALTY OF SURGERY (GENERAL SURGERY)

Colonel Belcher Hospital (D.V.A.)—3 and 6	Calgary, Alberta
Edmonton General Hospital—3	Edmonton, Alberta
Misericordia Hospital—3(a)	" "
Royal Alexandra Hospital—4(k)	" "
University of Alberta Hospital—8	" "
Crease Clinic of Physiological Medicine—3(g)	Essondale, B.C.
Shaughnessy Hospital (D.V.A.)—5 and 6	Vancouver, B.C.
St. Paul's General Hospital—3(f)	" "
Vancouver General Hospital—8	" "
Victoria Veterans' Hospital (D.V.A.)—3 and 6	Victoria, B.C.
St. Boniface Hospital—4	St. Boniface, Man.
Children's Hospital—3(g)	Winnipeg, Manitoba
Deer Lodge Hospital (D.V.A.)—5 and 6	" "
Winnipeg General Hospital—5	" "
Lancaster Hospital (D.V.A.)—3 and 6	Saint John, N.B.
Saint John General Hospital—3(j)	" " "
St. John's General Hospital—3(c)	St. John's, Nfld.
Camp Hill Hospital (D.V.A.)—5 and 6	Halifax, N.S.
Victoria General Hospital—8	" "
Hamilton General Hospital—3	Hamilton, Ontario
Hotel Dieu Hospital—3(a)	Kingston, Ontario
Kingston General Hospital—8	" "
Kingston Military Hospital—3(g)	Kingston (Barrie-field), Ontario
St. Joseph's Hospital—3(a)	London, Ontario
Victoria Hospital—8	" "
Westminster Hospital (D.V.A.)—5 and 6	" "
Ottawa Civic Hospital—3	Ottawa, Ontario
Ottawa General Hospital—5(b)	" "
Hospital for Sick Children—3(g)	Toronto, Ontario
New Mount Sinai Hospital—3(a)	" "
St. Joseph's Hospital—3	" "
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)—5 and 6	" "
Toronto East General and Orthopædic Hospital—3	" "
Toronto General Hospital—8	" "
Toronto Military Hospital—3(g)	" "
Toronto Western Hospital—8	" "
Women's College Hospital—3(p)	" "

Toronto Hospital for Tuberculosis —2(d)	Weston, Ontario
Hôtel-Dieu St-Vallier—4	Chicoutimi, Quebec
Hôpital Maisonneuve—8	Montreal, Quebec
Hôpital Notre-Dame—8	" "
Hôpital Saint-Luc—4	" "
Hôpital Sainte-Justine—3(g)	" "
Hôtel-Dieu de Montréal—8	" "
Jewish General Hospital—4(f)	" "
Montreal Children's Hospital—3(g)	" "
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Reddy Memorial Hospital—3(a)	" "
Royal Victoria Hospital—8	" "
St. Mary's Hospital—3(d)	" "
Hôpital de l'Enfant-Jésus—8	Quebec "
Hôpital du Saint-Sacrement—8	" "
Hôpital Ste-Foy (D.V.A.)—5 and 6	" "
Hôpital St-François-d'Assise—3	" "
Hôtel-Dieu de Québec—8	" "
Hôpital Général St-Vincent-de-Paul —3(e)	Sherbrooke, Quebec
Hôpital Général de Verdun—4(a)	Verdun, Quebec
St. Paul's Hospital—3(a)	Saskatoon, Sask.
Saskatoon City Hospital—3(o)	" "
University Hospital—8	" "

SPECIALTY OF THORACIC SURGERY

Baker Memorial Sanatorium—3(g)	Calgary, Alberta
Charles Camsell Indian Hospital —3(g)	Edmonton, Alberta
Vancouver General Hospital—8	Vancouver, B.C.
Vancouver Unit, Division of Tuberculosis Control—3(g)	" "
Manitoba Sanatorium—3(g)	Ninette, Manitoba
St. Boniface Sanatorium—3(g)	St. Vital, Manitoba
Nova Scotia Sanatorium—3(g)	Kentville, N.S.
Mountain Sanatorium—3(g)	Hamilton, Ontario
Beck Memorial Sanatorium—3(g)	London, Ontario
Toronto General Hospital—8	Toronto, Ontario
Toronto Hospital for Tuberculosis—3	Weston, Ontario
Hôpital du Sacré-Cœur—3(g)	Montreal, Quebec
Hôpital Notre-Dame—3(a)	" "
Hôpital Sainte-Justine—3(g)	Montreal, Quebec
Hôtel-Dieu de Montréal—3(a)	" "
Institut de Cardiologie de Montréal —3(g)	" "
Montreal Children's Hospital—2(d)	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Edward Laurentian Hospital (Montreal and Laurentian Divisions)—3	" "
Royal Victoria Hospital—8	" "
Hôpital Laval—3(g)	Quebec, Quebec
University Hospital—8	Saskatoon, Sask.

SPECIALTY OF UROLOGY

University of Alberta Hospital—8	Edmonton, Alberta
Shaughnessy Hospital (D.V.A.)— 5 and 6	Vancouver, B.C.
Vancouver General Hospital—8	" "
Deer Lodge Hospital (D.V.A.)— 5 and 6	Winnipeg, Manitoba
Winnipeg General Hospital—8	" "
Saint John General Hospital—3(j)	Saint John, N.B.
Camp Hill Hospital (D.V.A.)— 5 and 6	Halifax, N.S.
Victoria General Hospital—8	" "
Kingston General Hospital—3	Kingston, Ontario
Ottawa Civic Hospital—3	Ottawa, Ontario
Hospital for Sick Children—2(a)	Toronto, Ontario
St. Michael's Hospital—8	" "
Sunnybrook Hospital (D.V.A.)— 5 and 6	" "
Toronto General Hospital—8	" "
Toronto Western Hospital—8	" "
Hôpital Notre-Dame—8	Montreal, Quebec
Hôtel-Dieu de Montréal—8	" "
Jewish General Hospital—3(a)	" "
Montreal Children's Hospital—2(d)	" "
Montreal General Hospital—8	" "
Queen Mary Veterans' Hospital (D.V.A.)—5 and 6	" "
Royal Victoria Hospital—8	" "
Hôtel-Dieu de Québec—3	Quebec, Quebec
University Hospital—8	Saskatoon, Sask.

PROFESSIONAL WRITING

"The common level of medical and scientific writing in our professional books and journals already constitutes the most serious internal limitation to medical education and research. The usual level of professional writing is painful not merely to editors. Even after passing editorial filters, the virus of wretched writing can inflame, insult, and exhaust a clear-minded man. Much professional writing is verbose and repetitious. It is awkward and tiresome. What time it can spare from being vague it devotes to being inaccurate. By sheer carelessness of phraseology, the author belies his probable meaning by actual misstatement. Such writing defeats the very purpose of communication—to convey information clearly. The amount of carelessly written papers overwhelms everyone; the quality debases the standards of beginners, and the quantity obstructs and exhausts every honest and discriminating worker. I know of no editor of any medical journal who cannot at any time testify to the sheer incompetence of the writing in an inexcusable proportion of the papers submitted for publication. And even with the benefit of hours of editorial improvement, the medical literature of today exemplifies all too fully the biological adage that life is choked by its own secretions."—Alan Gregg: *For Future Doctors.* The University of Chicago Press, Chicago; the University of Toronto Press, Toronto, 1957.

THE ART AND SCIENCE OF MEDICINE

"There is a subtle antagonism between the art and the science of medicine: the art is centered on the patient as a person, while the science is centered on the phenomena of disease. They represent two opposing influences in medical thought: one the impulse to help the sick, and the other the compulsion to explain life and its phenomena. As the German surgeon Sauerbruch pointed out: 'The humanitarian motive does not occasion an interest in nature such as develops from a detached and impersonal curiosity.' The conditions most favourable for the study of disease tend to relegate the patient as a person to the background or to leave him almost entirely out of consideration; as specialism develops, thought becomes concentrated on localized medical problems and interest in the patient as a whole lessens. These two conditions, scientific study and specialism, affecting the doctor-patient relationship in the university hospitals, produced a definite defect in the medical care of patients and created a weakness in the American plan of medical education."—G. Canby Robinson: *Adventures in Medical Education.* Published for The Commonwealth Fund by Harvard University Press, Cambridge, Mass., 1957.

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THE EVOLUTION OF MEDICAL EDUCATION

Towards the end of the eighteenth century there were men on both sides of the Atlantic with bright and progressive ideas on medical education. Scotland, from which Canada later drew so much of its own strength in medical education, was in its heyday as a force in medicine. In America, back in 1765, John Morgan, an alumnus of the University of Edinburgh, was already advocating the plan of teaching of medicine in a university.

Then things went wrong. While the tide of medical reform rose in Britain and the nineteenth century saw a steady rise in the level of medical education, teaching of medicine in the U.S.A. dropped into an abyss from which it only began to emerge by painful stages in 1893, when the Johns Hopkins University School of Medicine was founded. Indeed in 1877, William Pepper complained that for fifty years U.S. medical schools had never been disturbed by a new idea. It is therefore interesting to note the publication within recent months of two books dealing with the vitally important periods of development in medical education in the United Kingdom and the U.S.A. respectively. The first of these, "The Evolution of Medical Education in the Nineteenth Century", by Charles Newman,[1] is an absorbing account of a period in whose progress Canada shared because of its close ties with Europe. The other book, "Adventures in Medical Education", is the personal narrative of an American medical educator, Dr. G. Canby Robinson,[2] who had the good fortune to study at Johns Hopkins University in the golden age of its medical school, and to participate personally in moulding of a number of American medical schools and research centres. Thus Dr. Newman's narrative covers the important period in British medical education, and Dr. Robinson's the important corresponding period in the U.S.A.

It is fashionable—indeed it has always been fashionable—for malicious persons to imagine that the learned professions never make any attempt at reforming or changing their pattern unless it is dictated by self-interest. If the physician condemns quackery, it is assumed that he does so in order to eliminate a dangerous competitor. If he attempts to improve his education, the malignant will say that the reason is financial. But any fairminded person who reads Newman's book must inevitably come to the conclusion that those nineteenth-century reforms which established British medicine as second to none were begun and carried on primarily by the medical profession themselves, actuated by high motives. Similarly, Robinson reveals in the narrative of his own life and of the lives of his contemporaries how a sense of social responsibility and a genuine concern for the sick rescued American medicine from the trough in which it wallowed in the nineteenth century.

In the early part of the nineteenth century it was not the public which clamoured for protection from quacks or for a higher standard of professional skill; it was the physicians, the surgeons, and the apothecaries (the three "orders" of the medical profession of the day) who stimulated reform. As always, there were two types of reformer; there was the quiet, reasonable, pedestrian type of reformer who was content to get things done by inches, while his antithesis, the highly emotional dynamic reformer, of whom Wakley is the prime example, went headlong into battle and probably gained less in the long run. Too much credit for the establishment of modern medical education in Britain has been given to the passage by the British Government of the Medical Act in 1858; Newman points out that this was only the culmination of forty-six years of agitation, and that that agitation came from within the profession. Indeed, he plainly shows that attempts to reform the profession by Act of Parliament had the direct effect of postponing reform by the profession itself.

Both Newman and Robinson note that at some point in the development of modern medicine the patient as an individual was forgotten. Before the development of the science of physical sign elicitation, and later of laboratory medicine, the physician's relationship with his patient consisted almost entirely of a dialogue between them, so that the physician understood the patient's problems very fully. Indeed, much of his effectiveness as a doctor was due to this role of listening and commenting. It is only within the last twenty-five years that the patient has begun to climb back into the centre of the picture. Robinson, who has all the Quaker sense of responsibility, records his early studies as a pioneer in the field of emotional problems at Johns Hopkins Hospital just before World War II, and calls attention to the distinction between "illness" and "disease". Diagnosis of disease is the goal of modern medicine; "illness" is what the patient feels about himself, and the two should not be confused.

Robinson says: "The educational process consists of equipping the student with a knowledge of contemporary science and techniques, and of moulding him into the right sort of person to apply this knowledge as medical service to individuals and communities. These are the two purposes of medical education, one academic and the other social. One teaches the facts of medicine, the other creates the physician." It may well be, as Newman rather suggests, that the classical education which was the mainstay of the physician 150 years ago was a better basis for the art of medicine than the modern technical education. Unfortunately, the growing complexity of medical technology has tended to push the social purpose of medical education into the background. Newman also points out that we should not be too proud of our "progress" from a classical to a technological education. The physician 150 years ago was more honoured than his modern counterpart. "Men are respected not for their technical skill, but their learning, their principles, and their magic." Though the increasing complexity of diagnosis and treatment makes it essential to give the physician a more profound training in the techniques of his profession if he is to be that ideal of the examiners, "a safe general practitioner", this is not necessarily the path to esteem. Respect and esteem are the hallmark of the wise man and not necessarily the technically proficient man. It is for this reason that our forefathers insisted on the incorporation of the medical school in the university. The concept of the truly educated physician goes hand in hand with that primary objective of medical education succinctly put by Robinson as "to create an everlasting dissatisfaction with a medical service that goes no further than this short-cut to a prescription".

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THE DOCTOR AND MEDICAL RECRUITMENT

Serious concern has been expressed at the evidence of a decline in the number of first-class candidates for admission to Canadian medical schools. Although all of our twelve Faculties of Medicine have been able so far to fill their freshman classes, in some instances this has been done by accepting all applicants who meet the minimum educational requirements. Little scope for selection is possible and consequently the rate of failure in medical courses has been higher than formerly.

A number of factors to explain the declining popularity of medicine as a career may be cited. The need for engineers and for non-medical scientists has been widely publicized and the employment possibilities in these fields have been represented as very attractive. The wastage of potential talent by failure to complete high school education and the inability of secondary schools to provide instruction in science subjects contribute to a general attrition of the available pool. The prospective intervention of the state in medical affairs has contributed to a sense of uncertainty for the future.

In competing for the best brains of Canadian youth, medicine must be portrayed as demanding long training, a considerable outlay of money, a hard working life, and continuous study to keep up with the advances of medical science. These factors have, however, been overstressed without presenting the compensations and satisfactions of a medical career. We are members of an essential and socially useful profession which offers infinite variety in its ramifications. We merit, and to a great extent enjoy, the respect of our fellow citizens and the monetary rewards have been commensurate with our contribution to society. Hard work and the investment of time and money are not necessarily discouraging to ambitious youth, and the grim spectre of government control has been overdrawn.

The practising doctor in his daily work has many opportunities to demonstrate the real worth of our profession and in his contacts with young men and women to contribute to their career decisions. Undue stressing of the hardships and disadvantages of the doctor's life is unworthy of the successful practitioner, and the careless and discouraging word is not justified by the facts of the situation. Few of us would exchange places with our neighbours in other occupations.

The recruitment of the medical profession of tomorrow depends in no small measure on the active support of us all. Immigration of qualified doctors from many lands is at a high level. These colleagues see in Canada the land of medical opportunity, and their assessment of the situation should encourage us to portray to young Canadians the advantages and satisfactions of a career in medicine.

Editorial Comments

ATYPICAL ANGINA PECTORIS

It is well known that many patients with angina pectoris present atypical symptoms, but their frequency in angina pectoris, chronic coronary insufficiency or myocardial infarction is difficult to estimate. It is probably higher than the 25% mentioned in the literature, since the majority of such cases are not reported because the individual practitioner does not consider his one or two observations important enough to be written up in a medical journal. In private conversation with physicians one is impressed with the variety of symptoms each one has observed at times, all of them undoubtedly due to coronary insufficiency.

Pharyngeal pain with dysphagia as the presenting symptom in coronary artery disease is rare. Mainzer,[1] in reporting four such cases, states that in a search through textbooks and monographs of cardiology he was able to find only three references.

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His first patient had been under treatment by an ear, nose and throat specialist for several months because of persistent sore throat and dysphagia, naturally without success. During physical examination he mentioned that the above pain became worse on walking or climbing stairs. His electrocardiogram disclosed coronary insufficiency, and subsequently he developed a typical posterior myocardial infarction. At the onset of the infarction, sore throat and dysphagia became very severe but disappeared completely after recovery.

In the second case, sore throat and dysphagia lasting several hours preceded a myocardial infarction by one week. These symptoms recurred during the acute episode and were very severe. No objective findings in the throat were present in the above two cases.

The third patient had recurrent attacks of vague precordial discomfort which were, however, completely overshadowed by sore throat and dysphagia.

During the attacks, some of which lasted several hours, the throat became intensely red, as in streptococcal sore throat. Nitroglycerin failed to bring relief. Eventually a much longer attack took place, lasting over twelve hours, during which the pain in the throat was almost intolerable. The description of the ECG and the clinical picture suggest a subendocardial infarction.

The fourth patient suffered a typical myocardial infarction with severe chest pain lasting 24 hours. During the first five days of illness there was marked hyperæmia of the throat, extreme sore throat and dysphagia.

Whilst sore throat and dysphagia are undoubtedly commoner in angina pectoris than would appear from the literature, the hyperæmia associated with it seems unusual. Vasomotor changes such as pallor accompany most cases, and at times may be very marked. Mainzer states that he observed one case in which vasospasm caused disappearance of the left radial pulse during the attack. He quotes Gallavardin, who observed redness (to the point of cyanosis) of the face with pallor of the left arm during anginal attacks. Mainzer explains the mucosal hyperæmia on the basis of vasodilatation. Danielopolu in reporting two cases of angina with sore throat and dysphagia suggested the following pathway for the pain impulses: cardiac sympathetic nerves—cervical chain—superior cervical ganglion—carotid plexus—cavernous plexus—gasserian ganglion—palatine nerves—superior maxillary nerve. Mainzer assumes that vasomotor impulses also follow this route.

In syndromes such as angina pectoris, where the diagnosis depends almost exclusively on history taking, familiarity with unusual patterns is of great help. It is also a stimulus for clinical research into the mechanism of visceral pain.

It is now well established that visceral pain can be modified by various means. It can be abolished or greatly reduced by anæsthetizing the somatic segment corresponding to the visceral nerve supply. Blistering a previously painless area or injecting it with 5% saline will cause radiation of anginal pain into that area. Patients with angina pectoris are known to have radiation of pain into a region of co-existing disease, such as gallbladder, elbow fracture, peptic ulcer, subdeltoid bursitis.

Cohen[2] suggested that a stream of subliminal impulses is constantly being sent from visceral and somatic nerve endings to the central nervous system. They are normally not appreciated, but when either kind of impulse is abnormally increased the threshold is exceeded and pain is felt.

It would be interesting to know whether abnormal increase of somatic impulses can be demonstrated in patients with angina pectoris and an unusual pattern of pain radiation. One has of course to remember that the age group in which angina pectoris is prevalent is also frequently afflicted by osteoarthritis and related painful conditions. In any case, careful analysis of every pain is rewarding to doctor and patient alike.

W. GROBIN

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1. MAINZER, F.: *Deutsche med. Wchnschr.*, **82**: 2027, 1957.
2. COHEN, H.: *Lancet*, **2**: 934, 1947.

MUNCHAUSEN'S SYNDROME

Most practising physicians have encountered patients who appear to have an almost pathological desire to be admitted to hospitals; and, in many cases, this can be dismissed as a simple supernormal variant of the average individual's desire for attention, or as some other equally harmless emotional quirk. However, it is only very rarely that one encounters this situation in what may be described as its ultimate form, characterized by the title of this editorial. Most people, both lay and professional, are familiar with the name of Baron Munchausen, an 18th century German cavalry officer who enjoyed a reputation as a teller of fanciful tales of his adventures in Russia. His name has become a household word for what may be described as the "tall story".

Although the eponym was first appropriated by the laity, it has, in recent years, been borrowed by the medical profession to characterize what may be described as the "perennial peregrinating problem patient".

This syndrome was first described in detail by Richard Asher in 1951. He outlined three varieties, and gave them whimsical appellations in a later paper. These were:

1. Abdominal type *(Laparotomophilia migrans)*—in which the patient travels about, submitting to repeated operations at various hospitals, only to leave against advice with his wounds still healing and intravenous drips still running.

2. Bleeding type (*Hæmorrhagica histrionica*)—characterized by dramatic and harrowing bleeding episodes.

3. *Neurologica diabolica*—in which the patient presents himself with unusual, but often convincing fits, spells, faints, and anæsthesias, paræsthesias, etc. More recent experience indicates that a fourth variety may be added—the cutaneous type *(Dermatitis autogenetica)*. This, of course, is an extreme variant of the better-known "dermatitis factitia". A typical example of this cutaneous variety is that

of a patient who learned that he had a cutaneous hypersensitivity to thiomerosal (Merthiolate) and anointed his entire body, including his eyes, with a clear solution of this material. This produced a severe exfoliative dermatitis, which served to gain for him admission into many hospitals in the U.S.A. He was found surreptitiously applying thiomerosal to his skin from a bottle kept hidden in a suitcase under his bed. The dermatitis cleared promptly when the drug was confiscated.

Patients with Munchausen's syndrome characteristically arrive at the emergency department with what seems to be acute organic disease. Their history is superficially believable, but is in reality a fabric of lies, interwoven with fact. Many surgical scars are usually found on the abdomen. These patients have a truculent and quarrelsome manner. The taking of the history usually discloses that they have attended an amazing number of hospitals, from which they have left against advice after quarrelling with the medical and nursing staffs. Their wallets contain numerous hospital attendance cards, insurance claim forms, and litigious correspondence. Their tolerance for investigative and therapeutic procedures is remarkable during the early days of their hospital stay, but rapidly decreases, and these patients invariably become uncooperative after a few days in hospital.

The factitious bleeders probably constitute the largest group of patients with this syndrome. These individuals are most often found lying on the ground "in a pool of blood", a short distance from the hospital of their choosing. They tell the admitting officers of various hospitals that they are priests en route to monasteries, students working their way through college, etc. They bleed from their eyes, ears, nose and urethra, and they inform their wide-eyed audience that they have had a splenectomy, or casually remark that a close relative "has Christmas disease". They produce bleeding by traumatizing their nasal mucosa and transferring blood to their eyes and ears with their fingers. Hæmaturia may be simulated by soaking bits of cloth in blood and then swishing them about in the patient's urine specimen.

Other patients have simulated pulmonary œdema by aspirating water from a drinking fountain, hæmaturia by traumatizing the urethra with a broom straw, fever by performing various tricks with thermometers, and even meningitis.

The motivation in this syndrome remains obscure and of course is the most interesting aspect of the problem. A number of explanations have been suggested in an effort to account for the apparently senseless behaviour of these derelict individuals. One explanation is that they draw pathological enjoyment from their dramatic roles. Some undoubtedly harbour a grudge against the medical profession and resort to these unusual devices in an effort to "get even". This appears to be an outstanding example of the procedure of "cutting off one's nose to spite one's face", and in many cases this description is almost literal. Another possible motivation is a desire for drugs, but this is one of the less likely explanations. It is, of course, well known that some of these individuals attempt to use hospitals as hiding places from the police; during recent years, advertisements as an aid in apprehending such people have appeared in various medical journals. Of course, the simplest explanation and possibly a correct one is that some may use this technique as an elaborate method of procuring free board and lodging. However, in consideration of some of the rather harrowing diagnostic procedures through which these patients happily pass, one feels that this is an exorbitant price for bed and board. Masochism, psychopathic personality, hysteria, schizophrenia, or other psychoses have been suggested in an effort to explain this unique behaviour pattern.

It would appear that there are only two possible methods of coping with these individuals. On the one hand, publicizing their histories in medical journals and thereby alerting the medical profession may be of some value. However, confinement in a mental hospital is probably the best method of management; otherwise it would appear that this barefaced exploitation of medical facilities will continue indefinitely.

S. J. SHANE

NEUROPATHY ASSOCIATED WITH CARCINOMA OF LUNG

Mild neuropathies are frequently observed in cachectic states and particularly in malignant disease. Severe progressive neuropathy has occasionally been seen in association with carcinoma of lung. The first two cases were reported by Denny-Brown[1] in 1948. In both these cases severe anæsthesia, ataxia and myopathy developed rapidly and led to death within a few months. At autopsy carcinoma of a bronchus was found in both cases but there was no evidence that metastasis had involved the nervous system in any way. In fact there was only a solitary metastasis to the stomach in one case and none in the other. Severe loss of nerve cells in the dorsal root ganglia, degeneration of the posterior columns and peripheral nerves, and a degenerative disorder of the muscle fibre were responsible for the neurologic disorder.

Most of the other cases reported came from the British Isles. Uehlinger[2] in the first report from Germany describes a similar case. A 58-year-old woman developed progressive sensory and motor disturbances, paræsthesia, ataxia and muscular atrophy during 8 months preceding her death. At autopsy, carcinoma of a bronchus was an unexpected finding. The changes in the spinal cord, peripheral nerves and muscles were similar to those of previous observers, as quoted by Uehlinger. There appears to be no relationship to osteoarthropathy or to the other syndromes known to be associated with carcinoma of lung (thromboses, hypercalcæmia). Except for one case in which it was associated with carcinoma of the œsophagus this neuropathy has so far been described only in association with carcinoma of the lung. It thus seems to be limited to malignancy within the chest. In some cases the cancer was otherwise asymptomatic or completely overshadowed by the severe nervous and muscular disorder. Because there is a resemblance between the clinical picture of this

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neuropathy and conditions of experimental vitamin deficiency, Denny-Brown believes that it is caused by metabolic interference with neurones and muscles by the tumour. Some of the cases improved after pneumonectomy.

Uehlinger prefers to call this a "meta-carcinomatous" neuropathy analogous to tabes dorsalis, which is regarded as a "meta-luetic" disease. If Uehlinger's estimate is correct that 1-2% of pulmonary malignancies are associated with this neuropathy, one would expect to recognize it more frequently. It would seem advisable to include the possibility of carcinoma of lung in the differential diagnosis of otherwise unexplained neuropathy. Numbness, incoordination, with or without loss of tendon reflexes, and muscular atrophy should make one think of a silent, perhaps early bronchial carcinoma.

W.G.

REFERENCES

1. DENNY-BROWN, D.: *J. Neurol. Neurosurg. & Psychiat.*, 11: 75, 1948.
2. UEHLINGER, E.: *Schweiz. med. Wchnschr.*, 87: 1580, 1957.

THE HEART-LUNG MACHINE IN OPEN-HEART SURGERY

Just six months ago an editorial comment appeared in these pages, describing the safety of hypothermia in the closure of atrial septal defects (5% mortality). At that time the use of the pump-oxygenator in open-heart surgery was said to carry a very high mortality rate.

Today the picture has changed dramatically. It is being realized more and more that most of this risk was due to the serious nature of the heart disease which was being operated upon, rather than the dangers of the pump-oxygenator itself. In medical centres everywhere these dangers have been systematically overcome by careful laboratory studies. Excessive blood destruction (as measured by plasma hæmoglobins) has been avoided by use of atraumatic pumps and a carefully streamlined blood circuit. The unavoidable metabolic acidosis (as monitored by blood pH and carbon dioxide values) has been kept to a minimum.

Only when one is fully aware of the performance, weaknesses, limitations and idiosyncrasies of the apparatus can one expect good clinical results. At the same time a highly trained pump "team" is developed in the laboratory, so that each member knows his job to perfection.

The mortality rate is now well under 5% in the less serious cardiac defects. DeWall achieved a mortality rate of 2.5% in 40 consecutive patients.[1] Spencer reports 13 consecutive cases of aortic commissurotomy with no mortality.[2]

Apparatus capable of handling large flow rates required by adult patients has needed further development and study. The technique is now quite safe for adults. The first four adults recently operated upon in Toronto have done well.

Now the more complicated lesions, such as tetralogy of Fallot, can be completely corrected with relative safety. Lillehei reports a mortality rate of 8% in the last 25 consecutive patients.[3]

The ultimate role of the pump-oxygenator in valvular heart disease is still uncertain. Mitral regurgitation can be dramatically corrected in carefully selected cases. Severely calcified lesions of the mitral or aortic valve must await further developments.

The final success of such a venture depends upon a large group of skilled people. Accurate diagnoses are mandatory, requiring competent cardiologists who employ modern diagnostic aids such as right and left heart catheterization, angiography, phonocardiography and dye dilution studies. Blood banks must be geared to provide several litres of fresh heparinized blood. Postoperative care must be meticulous.

In the months to come the technique will become even safer, and will play a very major role in the broadening horizons of cardiac surgery.

R. O. HEIMBECKER

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1. DEWALL, R.: Extracorporeal Circulation Conference, Chicago, September 20-22, 1957.
2. SPENCER, F.: Soc. Univ. Surgeons' Meeting, Boston, February 13-15, 1958.
3. LILLEHEI, W.: Soc. Univ. Surgeons' Meeting, Boston, February 13-15, 1958.

TEACHING PSYCHOTHERAPY TO MEDICAL STUDENTS

Quite a number of physicians in Canada must be aware by now of the efforts of Balint and his group in London, England, to teach selected general practitioners how to cope with their patients' emotional problems. In the light of his experience in training of general practitioners and social workers by group conferences, Balint has recently suggested an extension of the method to medical students (*Lancet*, 2: 1015, 1957).

There is an additional difficulty here, in that so many students are still immature and either wrestling with emotional problems similar to those seen in out-patients or without experience sufficient to guide them as therapists. Remembering that conferences on psychotherapy have been found to have a damaging effect on certain general practitioners, Balint proposes that the teaching of psychotherapy to medical students be conducted in two stages: (1) a general course to enable all medical students to acquire enough psychology and psychopathology to recognize when their patients suffer from an emotional conflict; (2) a more advanced course, based on actual management of cases and their discussion by teacher-student groups, to be offered only to a limited number of students chosen for their aptitude, maturity and stability of character.

The interesting point about the suggestion is that Balint is proposing for the first time a positive scheme for the selection of future general practitioners, and selection on the basis of positive attributes rather than by default. Those who successfully undergo this training will have taken the first step to learning how to manage their patients as persons and as a whole.

Medical News in brief

INTRAGLOSSAL INJECTIONS IN UNCONSCIOUS PATIENTS: AN ALTERNATIVE TO INTRAVENOUS INJECTION

An anæsthetist in Southern England (Bullough, *Lancet*, 1: 80, 1958) has been using intraglossal injections for five years without mishap. He found that drugs injected into the tongue start to take effect in 40-80 seconds as against 15-30 seconds after intravenous injection. The technique of injection is described and indications and contraindications are given. Intraglossal injection is recommended when veins are inaccessible and rapid onset of action is required. Stimulants, antidotes and other drugs can be given in emergencies, though irritant solutions should ordinarily not be used. In anæsthesia the relaxant Suxamethonium can be given by this route, paralysis developing in 90 seconds or sooner.

MYXOMA OF THE LEFT AURICLE

Five cases of myxoma of the left atrium were discovered by Harvey (*Ann. Int. Med.*, 47: 1067, 1957) among patients on the medical service of Johns Hopkins Hospital. These cases present certain common features. Symptoms and physical signs are similar to those produced by mitral stenosis but are quite variable with changes in body position. The onset of symptoms is sudden. Heart failure is progressive despite therapy. Syncope is frequent. Embolic phenomena commonly occur in the systemic, cerebral or coronary circulations. Intermittent fever, petechiæ and changing cardiac murmurs often suggest erroneously the diagnosis of bacterial endocarditis. The most important diagnostic clue is that symptoms and signs vary with changes in body position. Recent advances in cardiac surgery have made possible the successful removal of these tumours. Since the lesion is curable, the physician must recognize it when it is present, and see to it that the patient is offered a cure. The lesion, if untreated, leads inevitably to death.

RESPIRATORY INSUFFICIENCY AS A CAUSE OF DEATH IN HEAD INJURY

Respiratory insufficiency exists when gas exchange between lungs and blood falls below that between tissues and blood. Maciver and his colleagues of Newcastle-on-Tyne (*Lancet*, 1: 390, 1958) believe that there is a problem of respiratory insufficiency in unconscious patients with severe head injuries, and that anoxia is the main cause of death in patients who survive the accident but die later. They believe that if adequate oxygenation can be maintained, even the most severely injured patients may survive. Since directing their treatment to this factor, they have lowered mortality from 90 to 40%. It is important to realize that the majority who survive such respiratory insufficiency make a good physical recovery and rapidly return to a nearly normal mental state.

The regimen they advocate includes correct posture to prevent seepage into lungs and tracheal-bronchial tubes, temporary intubation, isolation of lungs from disorganized pharynx by early tracheotomy, continued aseptic tracheal-bronchial toilet, use of a lytic cocktail to control rigidity, restlessness, and hyperthermia, avoidance of oral feeding during unconsciousness, maintenance of physiological tensions of oxygen and CO_2 in the blood, maintenance of fluid and electrolyte balance and calorie intake, use of antibiotics, and relief or prevention of secondary cerebral œdema by intravenous triple plasma. It is essential to start this regimen as soon as possible, without waiting for the patient to reach a special centre.

IONIZING RADIATION AND LONGEVITY OF PHYSICIANS

It has been suggested that the average age at death of radiologists is several years less than that of physicians not using x-ray routinely. The inference has been drawn that the earlier death is associated with some x-ray hazard. However, Seltser and Sartwell of Johns Hopkins University (*J. A. M. A.*, 166: 585, 1958) have re-examined this problem epidemiologically, and do not agree with the above suggestion. They point out that radiology is one of the newest of medical specialties and that the age-group distribution of radiologists differs from that of physicians in general. In a large group of radiologists there are proportionately fewer in the older age groups, in which the force of mortality is heaviest; the percentage of radiologists aged 65 and over is 6.8, whereas the figure for all physicians is 15.4. The Johns Hopkins epidemiologists recalculated the expected age distribution at death and their results do not support the hypothesis that exposure to ionizing radiation has shortened the life of radiologists. Data are as yet not available for comparison of age-specific death rates of radiologists and non-radiologists, by following each age group in successive time intervals as they become older.

OCCULT FRACTURES

Occult fractures have been defined as fractures which give clinical signs of their presence but cannot be demonstrated by x-ray examination until reparative changes have occurred. In the *Journal of the American Medical Association* of February 8, 1958, Reich and Rosenberg draw attention once more to this entity and warn that negative radiographs may give rise to a false sense of security. If occult fractures remain untreated, they may cause much pain and disability. In the carpal navicular bone even repeated radiographs may fail to demonstrate a fracture, which is discovered only by the use of magnification techniques. Other bones commonly involved in occult fractures are the long bones in children, the tibia, the head or neck of the radius, the neck of the femur, and those within a joint. The diagnosis is a clinical one by the finding of a site of maximum tenderness and swelling in relation to a bone; when such a site has been pinpointed, the x-ray film should be carefully centred over it. In joint fractures, the presence of fat droplets in the joint effusion is pathognomonic.

(Continued on advertising page 52)

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PRELIMINARY PROGRAM

NINETY-FIRST ANNUAL MEETING

Canadian Medical Association

HALIFAX, JUNE 16-20, 1958

CLINICAL PROGRAM IN COLOUR TELEVISION

Monday, June 16

9.00 to 10.00 a.m.

Pulmonary Lesion—Diagnosis
DR. C. A. GORDON and group

10.00 to 11.00 a.m.

Lobectomy
DR. V. O. MADER

1.30 to 2.15 p.m.

Diagnostic Methods in the Evaluation of Patients for Cardiac Surgery
DR. D. L. ROY
DR. S. J. SHANE
DR. F. G. DOLAN

2.15 to 2.45 p.m.

Neurosurgery (Subject to be announced later)
DR. W. D. STEVENSON
DR. H. H. TUCKER

2.45 to 3.15 p.m.

Fracture Clinic
DR. B. F. MILLER
DR. J. C. ACKER

3.15 to 3.45 p.m.

Diagnosis and Treatment of Torn Knee Cartilage
DR. B. K. COADY

Tuesday, June 17

9.00 to 10.00 a.m.

Inguinal Herniorrhaphy
DR. E. F. ROSS
DR. J. K. PURVES

10.15 to 11.15 a.m.

Retropubic Prostatectomy
DR. C. L. GOSSE
DR. F. G. MACK

1.30 to 2.30 p.m.

Radical Neck Dissection
DR. G. W. BETHUNE
DR. J. A. MYRDEN

2.30 to 3.00 p.m.

The Diagnostic and Therapeutic Use of Radioactive Iodine in Thyroid Disease
DR. W. I. MORRIS
DR. J. E. STAPLETON

3.00 to 3.30 p.m.

Corrective Treatment for Low Back Pain
DR. J. A. NOBLE
DR. G. J. H. COLWELL

Wednesday, June 18

9.00 to 10.00 a.m.

(1) Vaginal Examination
(2) Conization of Cervix
DR. H. B. ATLEE
DR. CARL TUPPER

10.00 to 11.00 a.m.

Dermatological Clinic
DR. D. R. HOWELL
DR. J. D. MCLEAN
DR. H. I. GOLDBERG

PRELIMINARY SCIENTIFIC PROGRAM

Wednesday, June 18

SESSION A

9.00 a.m. - 12.00 noon — V.G. Nurses' Residence Auditorium

Chairman: DR. H. O. TONNING, Saint John

Familial Hypercholesteræmia
DR. J. L. GURAVICH, Saint John

The Relative Frequency and Management of Certain Endocrine Problems
DR. IAN RUSTED, St. John's

Needle Biopsy—Liver
DR. H. H. MACKINNON, Fredericton

SESSION A

2.30 - 5.00 p.m. — V.G. Nurses' Residence Auditorium

Chairman: DR. R. G. LEA, Charlottetown

The Late Results of Mitral Commissurotomy
DR. W. F. GREENWOOD, Toronto

The Diagnosis and Management of the Malabsorption Syndrome
DR. LENNOX BELL, Winnipeg

Moles and Malignant Melanomas: Their Origin and Their Management
DR. GEORGE S. WILLIAMSON, Ottawa

The Treatment of the Anginal Syndrome
DR. PAUL DAVID, Montreal

SESSION B

2.30 - 5.00 p.m. — Nova Scotian Ballroom

Chairman: DR. G. F. SKINNER, Saint John

The Surgical Treatment of Inguinal Hernia
DR. D. L. C. BINGHAM, Kingston

An Assessment of Results in Lung Cancer Surgery
DR. E. D. GAGNON, Montreal

The Gall-Stone Problem
DR. D. R. WEBSTER, Montreal

Pilot Study of Traffic Accidents
DR. HAROLD ELLIOTT, Montreal

SECTION OF SALARIED PHYSICIANS

2.30 - 5.00 p.m. Nova Scotian Salons B and C

Chairman: DR. A. R. MORTON, Halifax

The Function of the Physician in Industry
DR. D. C. BEWS, Montreal

The Effect of Socio-economic Trends on Medical Practice
DR. JOSEPH WILLARD, Ottawa

The Salaried Doctors' Contribution to Hospital Practice
DR. L. O. BRADLEY, Winnipeg

The Role of the Medical Administrator in Government Service
DR. J. S. ROBERTSON, Halifax

SECTION OF OBSTETRICS AND GYNÆCOLOGY

2.30 - 5.00 p.m. Nova Scotian Bedford Room

Chairman: DR. F. D. WANAMAKER, Saint John

The Incompetent and Obstructive Cervix
DR. JOSEPH TANZMAN, Saint John

The Management of Breech and Transverse Presentations
DR. JOHN H. MALONEY, Charlottetown

Mid-pelvic Dystocia
DR. W. D. MARSHALL, Victoria

The Management of a Patient in Labour for 24 Hours
DR. R. A. H. KINCH, London

A Comparison of Elderly and Young Primiparas
DR. R. T. WEAVER, Hamilton

SECTION OF GASTROENTEROLOGY

2.30 - 5.00 p.m. Nova Scotian Harbour Room

Program to be announced.

Thursday, June 19

ROUND TABLE CONFERENCES

9.00 - 10.15 a.m. Nova Scotian Ballroom

Ear, Nose and Throat Problems in Children

Chairman:
DR. W. ROSS WRIGHT, Fredericton

Participants:
DR. W. J. MCNALLY, Montreal
DR. A. E. DOULL, JR., Halifax
DR. J. B. WHALEY, Toronto
DR. MUNCEY TANTON, Woodstock

9.00 - 10.15 a.m. Nova Scotian Bedford Room

Recent Advances in Anæsthesia

Chairman:
DR. G. V. PARSONS, Moncton

Participants:
DR. E. R. DAVIS, Saint John
DR. W. A. OATWAY, Moncton
DR. A. F. PASQUET, Halifax
DR. L. E. PROWSE, Charlottetown

GENERAL SESSION

10.30 a.m. - 12.15 p.m. Nova Scotian Ballroom

Chairman: DR. A. F. VANWART, Fredericton

The Evolution of Infectious Diseases in the Course of History (The Blackader Oration)
DR. RENE J. DUBOS, New York

Problems in Cytodetection of Early Carcinoma of the Cervix
DR. MALCOLM B. DOCKERTY, Rochester, Minn.

Rheumatic Fever—Prevention and Treatment
DR. D. D. RUTSTEIN, Boston

SESSION A

2.30 - 5.00 p.m. V.G. Nurses' Residence Auditorium

Chairman: DR. R. C. DICKSON, Halifax

The Role of the Psychiatric Service in a General Hospital
DR. A. E. MOLL, Montreal

The Whys and Wherefors of Scalene Node Biopsy
DR. D. D. MUNRO, Montreal

Neck Traction in Various Types of Dizziness
DR. DAVID M. BELL, Edmonton

The Place of Renal Biopsy in Diagnosis of Medical Diseases of the Kidney
DR. JOHN D. L. FITZGERALD, Toronto

SESSION B

2.30 - 5.00 p.m. Nova Scotian Ballroom

Chairman: DR. GEORGE DUMONT, Campbellton

Subject of choice
DR. C. H. CROSBY, Regina

Diagnosis and Treatment of Carcinoma of the Stomach
DR. P. H. T. THORLAKSON, Winnipeg

The Early Diagnosis of the Acute Abdomen
DR. J. B. EWING, Ottawa

Neoplasms of the Small Intestine
DR. M. B. DOCKERTY, Rochester, Minn.

SECTION OF PREVENTIVE MEDICINE

2.30 - 5.00 p.m. Nova Scotian Bedford Room

Chairman: DR. J. A. MELANSON, Fredericton

Tuberculosis in General Practice
DR. G. E. MADDISON, Saint John

Factors Affecting Intracellular Lipoid Deposition in Human Aortic Cells in Tissue Culture
DR. D. D. RUTSTEIN, Boston

Food Poisoning
DR. R. D. LANDRY, Moncton

Progress in the Prevention of Virus Infections in Man
DR. R. J. WILSON, Toronto

The Children's Health Service in Newfoundland
DR. LEONARD MILLER, St. John's

SECTION OF PÆDIATRICS

2.30 - 5.00 p.m. Victoria General Hospital Auditorium

Chairman: DR. R. G. MACDONALD, Saint John

Diabetes Mellitus in Infancy
DR. BARBARA ROBINSON, Fredericton

Preventable Mental Deficiencies
DR. L. E. LEBLANC, Edmundston

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The Production of Immunity to Tuberculosis by a Fraction Derived from Killed Tubercle Bacilli
DR. RENE J. DUBOS, New York

Open Heart Surgery in Children
DR. D. R. MURPHY, Montreal

Friday, June 20

ROUND TABLE CONFERENCES

9.00 - 10.15 a.m. Nova Scotian Ballroom

Recent Advances in Dermatological Therapy
Chairman:
DR. J. G. MACLEAN, Saint John
Participants:
DR. FREDERICK KALZ, Montreal
DR. E. J. TROW, Toronto
DR. A. R. BIRT, Winnipeg
DR. W. S. MADDIN, Vancouver
DR. JEAN GRANDBOIS, Quebec

Current Obstetrical Problems
Nova Scotian Bedford Room
Chairman:
DR. H. B. ATLEE, Halifax
Participants:
DR. W. G. COLWELL, Halifax
DR. K. M. GRANT, Halifax
DR. CARL TUPPER, Halifax
DR. I. A. PERLIN, Halifax
DR. J. McD. CORSTON, Halifax
DR. M. G. TOMPKINS, JR., Halifax

GENERAL SESSION

10.30 a.m. - 12.15 p.m. Nova Scotian Ballroom
Chairman: DR. CHARLES GASS, Tatamagouche

The Relief of Deafness by Means of the Newer Operations
DR. W. J. MCNALLY, Montreal

Subject of choice (Cardiology)
DR. AUBREY LEATHAM, London, England

Medical Treatment of 1000 Cases of Asthma and Rhinitis
DR. F. S. GRÉGOIRE, Montreal

SESSION A

2.30 - 4.30 p.m. Nova Scotian Ballroom
Chairman: DR. A. L. DONOVAN, Saint John

Œsophageal Lesions
DR. N. S. SKINNER, Saint John

Subject of choice
DR. DOUGLAS CAMERON, Montreal

Perphenazine in Practice
DR. N. L. MASON-BROWNE, Essondale, B.C.

Subject of choice
DR. R. C. DICKSON, Halifax

SESSION B

2.30 - 4.30 p.m. V.G. Nurses' Residence Auditorium
Chairman: DR. H. E. BRITTON, Moncton

Recent Trends in the Treatment of Diverticulitis
DR. R. A. L. MACBETH, Edmonton

Radiotherapy Following a Simple Mastectomy
DR. J. A. CASKEY, Saint John

The Treatment of Carcinoma of the Breast
DR. IAN MACKENZIE, Halifax

Staphylococcus Empyema
DR. G. F. SKINNER, Saint John

ARMED FORCES MEDICAL SECTION

2.30 - 5.00 p.m. Nova Scotian Salons B and C
Chairman: DR. B. K. COADY, Halifax
Theme—Medical Problems of the Maritime Commands

Army Maritime Medical Problems
COLONEL J. E. H. MILLER, RCAMC(M), Halifax

Psychiatric Problems in Recruits
MAJOR D. H. B. BEVAN-JONES, RCAMC, Halifax

Acceleration—Man and the Machine
SURGEON LIEUTENANT COMMANDER H. D. OLIVER, RCN, Halifax

A Review of Medical Air Evacuation in Eastern Canada
FLIGHT LIEUTENANT F. L. LANDRIGAN, RCAF, Greenwood

Problems of Peptic Ulceration in a Naval Environment
SURGEON COMMANDER R. H. ROBERTS, RCN, Halifax

SIGHTSEEING IN NOVA SCOTIA—1

[From the Nova Scotia Press Bureau, Halifax, comes the following story which may help our visitors to the C.M.A. Annual Meeting in Halifax, June 16-20, 1958.]

A veritable treasure chest of holiday pleasures, richly endowed by nature, steeped in romantic history . . . that's Nova Scotia.

Famous for its sea-foods, especially the lobster, salt-air-conditioned Nova Scotia is shaped remarkably like a huge claw of one of these crustaceans. Nova Scotia is the world's greatest producer of lobsters, and tourists are gladly welcomed at lobster pounds and canning factories.

In addition to being a vacation paradise, Nova Scotia has a wealth of industrial potential, with unlimited coal supplies, reasonable electric power rates, great natural resources such as the surrounding sea and its wealth, unlimited forests, tremendous deposits of gypsum, clay, the largest single deposit of barytes in the world, salt and other minerals. There is a good supply of labour, Nova Scotians having received the reputation through the years of being faithful, conscientious workers. At Sydney in Cape Breton Island is the largest self-contained steel manufacturing plant in America, and at Liverpool one of the country's leading paper manufacturing industries (in fact, the paper you are reading now might have been produced there).

Jutting out into the Atlantic like a giant pier, from the eastern Canadian mainland, Nova Scotia is strategically placed on the trade routes of the world. Less than 400 miles in length, with no inland spot more than 50 miles from the invigorating Atlantic, Nova Scotia boasts 5000 miles of rugged, picturesque coastline, more than three times the Pacific frontage of the United States.

"Canada's Ocean Playground" is an apt title for this wonderful vacationland. Except for a narrow 17-mile strip of rich marshland connecting it to the Canadian mainland, the province would be an island.

Countless red-and-silver sand beaches, playgrounds for both young and old, are sprinkled along its heavily indented coastline. A multitude of bays and inlets make the province a favoured spot for yachtsmen and pro-

Nova Scotia Film Bureau

Peggy's Cove, near Halifax, where the mighty Atlantic has worn smooth the granite ledges through the ages.

vide unparalleled marine vistas for "landlubbing" visitors. Many are the visitors who have been impressed by the skill and workmanship embodied in sailing craft and sport cruisers turned out by Nova Scotia craftsmen in villages and towns along the coast.

The weather is tonic in Nova Scotia, the summertime so pleasant in this seaside holidayland that it has been compared to the French Riviera. Cooled by whispering breezes of the blue Atlantic, Nova Scotia enjoys a refreshing average temperature of 70 degrees during summertime. There are comparatively few "hot" days . . . sleep is refreshing, for the night air is pleasantly cool.

Visitors afflicted with hay fever find the southwestern tip of the province, Yarmouth and area, a wonderful relief, and there are other parts in the province free of the bothersome affliction.

Over two thousand miles of fine paved highways interlace the comparatively small province. Winding roads lead from lovely peaceful valleys to superb marine scenery where highways skirt bold headlands pummelled by roaring breakers and thread through quiet coastal villages adorned with bleached lobster traps, fish nets drying in the sun and where, on placid waters, fishing boats tug lazily at moorings.

Nova Scotia is a mecca for artists and photographers. Seaside villages with fishermen's homes built amid granite boulders offer excellent studies. There are countless spots where the surf tosses high in creamy banks, then explodes on the shore; old fishing schooners silhouetted against glorious sunsets; white-winged yachts cleaving gracefully through blue seas; solemn white-faced oxen plodding country lane, hauling unique pole-rigged carts; sheep grazing on pastures clinging to wave-swept shores; nets spread to dry on old fences, looking much like spider webs draped in the sunlight; wheeling seagulls flirting with mirrored waters of sheltered coves.

All of the 5000-mile coastline is one big happy hunting ground for artists and photographers. One of the most visited is Peggy's Cove near Halifax on the scenic South Shore. George Matthew Adams writes thus of Peggy's, as it is commonly called: "I place it all alone on a separate page in my memory book of beauty spots. It's scenically unique! I saw a sunset there. The soft grey-purple shadows crept across the granite of the great rolling rocks, leaping to the fishing craft in the little harbour, playing upon tiny beds of flowers that line the homes of these simple folk and then melting to the water's edge to die in the moss and weeds about the base of the rocks and the foam of the sea. The rocks there are smooth, washed by centuries of sea waves, by some so mad they have bitten into the face of the rock and given to it thousands of dimples. And there are gorges and steps and great platforms so smooth you could happily sleep upon them on a blanket."

There is Chester, summer home for many Americans, high on a hill giving a panorama of blue sea, saucy yachts and 365 pine-and-spruce topped islands . . . "one for each day of the year", as the inhabitants will tell you. Custom-made craft are born at Chester, and wrought iron of unusual skill and design can be made to order.

Lunenburg, home of many deepsea fishing craft, has a waterfront with wharves, fish plants, ship chandlers and ship yards as fascinating as the salty tales spun by old salts of this two-century-old Nova Scotia port on the South Shore.

On the way to Yarmouth are the cooperative Pubnicos, Acadian strongholds, their romantic history extending back three centuries. Along the highways Irish moss, valuable for its by-products, dries in the sun and air. Yarmouth is the port of entry for thousands of tourists via the new, multi-million dollar car-and-passenger ferry *Bluenose* plying between this southwestern Nova Scotia port and Bar Harbor, Maine.

Nearby is Wedgeport, world-famed for its bluefin tuna angling and locale of the great angling classic, the annual International Tuna Cup Match held each September. Visitors may angle for the king-size bluefins from early July till late September or even later, with all the equipment provided at Wedgeport, including sleek boats, rods, bait and guides. The biggest fish ever caught off Wedgeport on rod and reel was a 932-pounder. In this area Acadians build duplicates of their Cape Island-type boats for fishermen in many parts of the world. From the area, too, bloodworms, ideal for angling bait, are shipped via plane to U.S. markets.

(To be continued)

REDUCED RAILWAY FARES

Arrangements have been completed with the Canadian Passenger Association to permit members and their families to obtain reduced railway fares in travelling to and from the meetings of the C.M.A. and/or affiliated medical societies in Halifax, N.S., and St. Andrews, N.B. For details see page 448 of the March 15 issue.

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GENERAL PRACTICE

NEW FEATURES PROVIDED AT GENERAL PRACTICE SESSIONS

A CONTINUOUS SHOWING of selected medical films, a medical check-up for general practitioners, and live demonstrations of medical techniques are features of the second annual Scientific Assembly of the College of General Practice of Canada. More than 20 medical authorities from across the continent will address the sessions, April 14 to 16, and exhibition rooms at Winnipeg's Royal Alexandra Hotel will hold over 100 scientific and technical exhibits.

The daily showing of medical films is an innovation designed to augment speakers and exhibits in bringing to the family physician as much medical knowledge as possible in the three-day convention. The 16 films selected for the Winnipeg convention deal with stress, poliomyelitis, emotional disturbances, menstruation, heart disease, rectal disorders, medico-legal problems, epilepsy, arthrosis, neuralgia, and breast and colon malignancies. Institutions, organizations, and commercial sponsors of medical films have been invited to provide literature and information on other films available to medical audiences. The program of films will be shown daily from 8:40 a.m. to 5:20 p.m.; thus where a film conflicts with a scientific session, it can be seen on one of the other two days.

The medical check-up, an innovation at last year's scientific convention of the College, has been expanded to provide a more complete examination. Busy general practitioners inclined to postpone their own medical requirements in favour of patients' demands found their wives prompting them to avail themselves of the medical check-up at the College convention in 1957. When they register at the convention, doctors will be asked to make an appointment convenient to their program. The appointments will be scheduled to avoid waiting time. The medical examination (without charge) will include a medical history, urinalysis, blood pressure, hæmoglobin readings, chest, abdominal and rectal examinations, chest radiograph and electrocardiogram. The results will be confidential and available only to the doctor examined. Of 800 physicians who attended the first annual scientific sessions of the College, 273 had a check-up. The examinations provided reports of 139 abnormalities in a smaller number of doctors ranging from a suspicion of trouble to serious conditions.

More than 70 technical exhibits have been arranged by commercial exhibitors, and some 30 scientific exhibits are being provided by medical institutions and individuals. The scientific exhibits embrace diagnosis, treatment and aspects of arthritis and rheumatic diseases, hip joint disease, tuberculosis, bowel normalization, cancer, heart trouble, emotional disturbances, eye, ear and nose troubles, neuromuscular disturbance, myxœdema, alcoholism, hypertension; they deal with artificial respiration, home accidents, cervix and endometrium studies, cytological sex diagnosis, diabetic meal planning, mental health, refresher courses, and postgraduate educational aids, techniques in plaster of Paris application and plastic repair of wounds, stimulation vs. tranquillization, and blood transfusion service.

Scientific papers will be given daily from 9 a.m. to 5 p.m. Copies of the papers, in English and French, will be available at the lecture hall. Speakers will include: Dr. A. R. Birt, dermatologist, Winnipeg; Dr. J. A. Blais and Dr. Roméo Boucher, internists, Montreal; Dr. Robert C. Dickson, Professor of Medicine, Dalhousie University, Halifax; Dr. Ronald L. Dupuis, surgeon, Montreal; Dr. Charles Feilding, Dean of Divinity, Trinity College, University of Toronto; Dr. Marion Hilliard, gynæcologist and obstetrician, Toronto; Dr. John D. Keith, pædiatrician, Toronto; Dr. W. A. Lange, plastic surgeon, Detroit; Dr. John F. McCreary, Professor of Pædiatrics, University of British Columbia, Vancouver; Dr. H. L. McNicol, surgeon, Flin Flon, Manitoba; Dr. J. H. Portnuff, gynæcologist and obstetrician, Montreal; Dr. C. H. Slocumb, internist, Mayo Clinic, Rochester, Minnesota; Dr. J.-Emile Simard, Professor of Surgery, Laval University, Quebec; Dr. E. W. Spencer, Professor of Radiology, University of Saskatchewan; Dr. Blake Watson, gynæcologist and obstetrician, Los Angeles; and Dr. T. C. Wilson, otolaryngologist, University of Alberta, Edmonton.

MEDICAL SOCIETIES

SECOND WORLD CONGRESS, INTERNATIONAL FEDERATION OF GYNÆCOLOGY AND OBSTETRICS

The Second World Congress of the International Federation of Gynæcology and Obstetrics, which will be held in the new Queen Elizabeth Hotel, Montreal, from June 22 to 28, 1958, will have on its program eight main lectures given by scientists whose studies and research are related to the field of gynæcology and obstetrics. The guest speakers and the titles of their lectures are as follows: Professor Murray L. Barr, Department of Microscopic Anatomy, University of Western Ontario, London: "Tests of chromosomal sex and their application to clinical problems". Professor Herman Bautzmann, Anatomisches Institut, Hamburg, Germany: "Comparative studies on the histology and function of animal and human amnion". Professor Roberto Caldeyro-Barcia, Chief of the Section of Obstetrical Physiology, Faculty of Medicine, Montevideo, Uruguay: "Contractility of the human gravid uterus and its application to the obstetrical clinic". Professor G. W. Harris, Head of the Department of Neuroendocrinology, Maudsley Hospital, London, England: "Relationship of the central nervous system to pituitary and reproductive activity". Professor Charles Oberling, Institut de Recherches sur le Cancer Gustave Roussy, Villejuif (Seine), France: "The cytology of the cancerous cell". Professor Bradley M. Patten, Chairman, Department of Anatomy, University of Michigan Medical School, Ann Arbor: "The establishing of fetal-maternal vascular relations". Professor Hans Selye, Director of the Institute of Experimental Medicine and Surgery, University of Montreal: "Stress in gynæ-

cology". The eighth speaker will be a representative of the U.S.S.R. (on a subject of his choice).

All correspondence should be directed to the Montreal Committee, Second World Congress, International Federation of Gynæcology and Obstetrics, 1414 Drummond Street, Suite 220, Montreal 25, Quebec.

CANADIAN DIABETIC ASSOCIATION

The Medical Advisory Board of The Canadian Diabetic Association will hold a brief scientific session in Halifax from 2 to 5 p.m. on June 17, 1958. Any physician who is interested in diabetes is invited to offer a paper for presentation at that time. Submissions should be made to Dr. Gordon Wiswell, chairman of the Program Committee, 186 Robie Street, Halifax, N.S. Presentations should not exceed 20 minutes.

CANADIAN ASSOCIATION OF RADIOLOGISTS– L'ASSOCIATION CANADIENNE DES RADIOLOGISTES

At the 21st Annual Meeting of the Canadian Association of Radiologists, held in London, Ont., in January, the following officers were elected for the year 1958: President, Dr. A. R. McGee; Vice-President, Dr. E. M. Crawford; Honorary Secretary-Treasurer, Dr. Guillaume Gill; Associate Honorary Secretary-Treasurer, Dr. Robert G. Fraser.

SECTION ON INDUSTRIAL MEDICINE, O.M.A., AND INDUSTRIAL MEDICAL ASSOCIATION OF QUEBEC

The annual combined meeting of the Section on Industrial Medicine of the Ontario Medical Association and the Industrial Medical Association of the Province of Quebec will take place in Kingston, Ont., September 17-19, 1958.

All physicians with full-time or part-time industrial affiliations are welcome to attend the sessions. Registration will be at the LaSalle Hotel from 9 to 11 a.m. on September 17, 1958.

"THE A.M.A. NEWS"

The Board of Trustees of the American Medical Association recently authorized the publication of a new 16-page tabloid newspaper to be called "The A.M.A. News". This newspaper, which will probably appear first at the end of June, will be distributed every two weeks to approximately 200,000 physicians and is intended to act as a means of improving communications between the Association and its members. It will contain details of the many projects and activities of the A.M.A. as well as all the non-scientific news of interest to the profession.

MISCELLANY

DOCTORS AND PATIENTS

CHARLES PEAKER, Mus.D., F.R.C.O.,
Toronto

My doctor has just been in. He took my pulse. Then he struck me like a gong and listened for harmonics while I gave a request performance of Hamlet panting before his father's ghost.

A younger doctor stood by and I was irresistibly reminded of a conductor and train-man inspecting my ticket—"return," I trusted.

We all smiled. I was "dry". Shucks! My university students could have told them that.

I said, "When can I go home?"

A chill fell on the room. The younger doctor looked out of the window and coughed discreetly. If in my cups I had told the Bishop of Toronto a naughty story I could hardly have been more abashed. I stared mutely at my doctor—a man young enough to be my son: I had a curious impression that he was my uncle.

What was this? For every effect there must be a cause in this best of all possible worlds.

Permit me to make a detour.

I lunch occasionally at the Arts and Letters Club and there, modestly I feel the equal of my fellows. Yet, with a professional man there is a disconcerting change when you meet your dinner-table companion in his official dress. There is reverence for bishop and clergy robed (I know them), respect for the awe-inspiring habiliments of judge and counsel, but, in my mind at least, timidity before white-robed doctors, and nothing but shocked horror at the terrifying accoutrements of the surgeon.

After many years of experience I have begun to understand and even love the clergy. I like and admire lawyers, but it is not quite the same with the "medicine man". This may be, in part. a legacy from my awe-struck childhood in England; it may be the mantle of omniscience all physicians wear; and undoubtedly a man's supine posture in bed has a lot to do with it. Surely there is nothing like a hospital nightie to revise one's social status, unless it be the "deep dark dock" of a criminal trial.

Odd though! In court they do not assume that you have lost your mind, a Catholic in the confessional remains coherent I fancy, but a fever, an operation or a coronary like mine is supposed to derange "the little grey cells".

In fine, what is it about a hospital bed that causes so Procrustean a shrinkage of a man's stature?

Largely, it must be the ignorance of the patient versus the knowledge of the doctor. For instance, when a doctor pushes you violently in the belly, looks hard at your neck and then turns with a grimace to his colleague, it takes the fortitude of a Martin Luther to remain unmoved.

Then too, there is that conspiracy between doctors and nurses by which the party most concerned is met with smiling silence if he enquire about his pulse, temperature or blood pressure.

Of course I know full well that three weeks ago I was in no condition to consider any statistics whatsoever. I was dimly aware that a jar of preserves hung above me, re-fueling me from the air, but otherwise I

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floated in a sort of Buddhist Nirvana. No information could have reached me then.

But I am convalescent now and well-disposed to debate, even though a trifle bemused with Luminal.

I have decided that there must be a lecture-course in Medical School entitled "The Bedside Manner" or "What a Patient Should Know".

It is likely a psychological study of men like the Headmaster of Upper Canada College, Joe Louis, Dr. Fu Manchu and Sir Ernest MacMillan. I imagine that Harry Truman's cordiality together with the avuncular personality of Mr. St. Laurent is held up for emulation, seasoned with a dash of Adolf Hitler.

Certainly, someone like Sir Laurence Olivier has recorded, for imitation, phrases such as "How are we today"—"Keep it up" (keep what up?)—"Lie down"—"Stick to it," and "How are your bowels?" This last one reminds me of a certain Pauline epistle, in the King James version.

The result of all this is pure theatre in its unreality. As the curtain rises you see a hospital bed left-centre (and very little else) on which a rebellious moron is sitting. Enter with martial stride the medical men as Inspector and Constable, with a beautiful nurse in tow. Colloquy as above—nurse respectfully silent. Exit General and Staff—crushed moron lies down—Curtain.

Ah well! I can't complain. Since writing this I have cornered my man—a well-read, musical Welshman—and accused him of all the foregoing. He admitted "the soft impeachment" and gave me an account of my illness in terms I could understand.

He laid it on a bit thick. I have a notion that he thinks all musicians are loony anyway and must be well frightened.

My emancipation draws near. No angel newly born in Heaven ever exulted more over her wings than I shall over my trousers when I put them on again.

But for the constant care of doctor and nurses I might not have lived to write this peevish article.

18 Nesbitt Drive,
Toronto 5, Ontario.

PUBLIC HEALTH

EPIDEMIC AND UNUSUAL COMMUNICABLE DISEASES

INDIAN AND NORTHERN HEALTH SERVICES.—The following reports have been received from Dr. P. E. Moore, Director, Indian and Northern Health Services, and Dr. J. S. Willis of the Northern Health Services.

Streptococcal Sore Throat

Dr. W. L. Falconer, Regional Superintendent, Foothills Region, reported an outbreak of streptococcal sore throat at Coppermine involving 19 children and adults. The epidemic was controlled by penicillin and triple sulfonamide given therapeutically and prophylactically. The source seems to have been a pilot who was suffering from a sore throat when landing at Coppermine.

Impetigo

An outbreak of impetigo and several cases of pneumonia have been reported by Dr. Falconer at Site 22, in the general area of King William Island. The source seems to have been a woman with a draining sinus in the region of her previous thoracoplasty.

Upper Respiratory Infection

The Regional Superintendent, Saskatchewan Region, advises that there was an outbreak of upper respiratory infection at the Prince Albert Indian Residential School involving 48 children. The illness was of short duration (3 days). The causative organism was not identified but Asian influenza was ruled out.

Cat Scratch Disease

Dr. E. L. Harvey of Arcola, Saskatchewan, reports a case at the Crooked Lake Agency. This patient developed a firm, slightly tender subcutaneous lump over her left sternomastoid muscle which did not respond to treatment. The node was sent to the Saskatchewan Provincial Laboratory and the diagnosis was "typical of cat scratch disease".

Poliomyelitis

Dr. T. J. Orford, Zone Superintendent, North Battleford Indian Hospital, reports a case of paralytic poliomyelitis in a four-month-old girl at Onion Lake Reserve. The prognosis is good and complete recovery is expected.

Cerebrospinal Meningitis

A case of cerebrospinal meningitis in a male Indian child has been reported from the McIntosh Indian School in the District of Kenora.

Diarrhoea

Dr. M. Savoie, Quebec Zone Superintendent, reports that there have been 20 cases involving newborns and also children up to one year old. Ten were hospitalized and five died. The outbreak is now under control. The causative agent was a particularly virulent type of *B. coli*. One of the patients developed septicæmia and subsequent meningitis.

Typhoid Fever

One case has been reported in an Eskimo child at Frobisher Bay. He was admitted at the Montreal Children's Hospital. The culture done by the provincial laboratory revealed *Salmonella typhi* Type C. The source is unknown. Water samples are being submitted and the Eskimos at Frobisher Bay will be vaccinated.

Salmonella Typhimurium

British Columbia—Dr. Anderson of Campbell River has reported 11 cases of salmonellosis.

Mumps

Nova Scotia—Dr. H. B. Colford, Director of Communicable Disease Control, forwarded a report from the M.O.H., Lunenburg-Queen Division, advising that 20 cases have occurred at Broad Cove and Vogler's Cove. It is stated that mumps is now epidemic in Lunenburg County.

Alberta—Dr. E. S. Orford Smith, Director, Division of Local Health Services, forwarded a report from Mrs. Katherine Coutts, Municipal Nurse, advising that 11 cases have occurred in the Fort Assiniboine area. Dr. Orford Smith states that mumps is quite prevalent throughout the province.

LETTERS TO THE EDITOR

STANDARD WARD HOSPITALIZATION?

To the Editor:

In Federal Bill 320 and again in Alberta Bill 101 the term "standard ward hospitalization" is defined and appears as an item to be supplied under the soon to be enforced Hospital Insurance scheme.

Under "standard ward hospitalization" is a subsection headed "Interpretations".

There is a small but important change in the Alberta document in that, following the word "Interpretations", has been added, "which are regarded as professional medical services". The exact significance of the change remains to be seen. What is important is that certain phases of medical or professional services have been included in the Hospitalization Insurance legislation. This has been the problem which this writer and a small group of associates have struggled against almost continuously since 1952. Have we lost? Only time will tell—and how little time between February 3, 1958, on which this is written and April 1, 1958, when the scheme comes into force!

What then is or may be included under "standard ward hospitalization"?

Let us illustrate by a hypothetical case.

A middle-aged female enters hospital with the following complaints: general fatigue, headache, blurring of vision, change in voice, some difficulty in swallowing, cough, weight loss, loss of appetite, and irregular vaginal bleeding. Symptoms are of about 6-8 weeks' duration. Amongst other things, on physical examination a small mass is found in the left supraclavicular area, and a mass in the epigastrium.

The attending physician, a general practitioner, orders: urinalysis, complete blood count, blood Wassermann—routine tests done on practically all patients. The tests are performed by laboratory technicians trained under a qualified pathologist who is responsible for the quality of work in the laboratory.

It is agreed that if these tests are normal they probably do not reach the direct eye of the pathologist. However, the blood count proves abnormal and the technician has been trained to bring this directly to the attention of the pathologist. The latter orders a repeat count to avoid error, and the preparation of blood smears for his examination. This is a diagnostic procedure, and the pathologist is responsible for the interpretation of the tests.

A chest radiograph is ordered by the attending physician, as well as a barium study of the œsophagus and upper gastro-intestinal tract. The chest radiography is carried out by a trained technician, the responsibility of a radiologist. The latter carries out the medical procedure of interpreting the chest film, which shows numerous soft tissue shadows and enlarged hilar nodes. The radiologist himself carries out the barium studies, assisted by a technician—a diagnostic procedure for the interpretation of which the radiologist is responsible. The attending physician orders an electrocardiogram—done by a trained technician likely the responsibility of the pathologist or radiologist. The prepared tracing is interpreted by a qualified internist—a diagnostic procedure.

A surgeon is called in, and after looking into the case prescribes and carries out removal of the small mass (lymph node) above the clavicle, as a diagnostic procedure. The node is sent to the pathologist for examination.

At the same time the pathologist has carried out a liver biopsy.

Similarly, other specialists may as readily be brought into the picture, e.g., a neurologist who has an electroencephalogram prepared as a diagnostic procedure, which he will interpret. An ophthalmologist may study the patient's eyes after dilatation of the pupils—a diagnostic procedure. An otolaryngologist may similarly anæsthetize the throat and study the upper respiratory passages. The gynæcologist recommends and performs a diagnostic curettage—sending the tissue to the pathologist for interpretation.

Here then we have involved many if not all of the various medical specialists in carrying out a host of diagnostic procedures. Each provides something from his own particular special training and experience. How can they be separated as to their contribution? They can't and they shouldn't be. Each is a medical practitioner carrying out a professional service for which he is trained.

The legislation in its present form is broad enough to include all of the above practitioners. Is that the intent? One cannot help but wonder.

Even if it includes but one of these practitioners, it is wrong in principle according to our free-enterprise system.

A clean-cut separation of professional medical services from hospitalization with the probable exception of administration is required. The space in the hospital, be it operating room, laboratory or x-ray department; the necessary equipment therein; the assistance of technicians, etc.—yes, are all a part of hospitalization, but not the professional medical skill of the qualified physician.

By the way, the result of these investigations—piecing together these numerous diagnostic procedures and tests and their proper interpretation—did establish the diagnosis, chronic lymphatic leukæmia.

R. M. CLARE, M.D.

Edmonton General Hospital,
Edmonton, Alta.,
February 3, 1958.

CARBON MONOXIDE POISONING

To the Editor:

I find the article captioned "Carbon Monoxide Asphyxia, a Common Clinical Entity", appearing on page 182 of the February 1 issue of the Journal, somewhat confusing, and I fear that some readers may be misled by it.

The carbon monoxide hazard in industry has been recognized for a great many years and steps have been taken by various Workmen's Compensation Boards to control it.

I am unable to locate anyone who was present at an annual convention of Canadian Compensation Boards in December 1954. I was present at the convention in Halifax in September and I have no recollection of this case having been discussed. Certainly it

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would not have been considered a novelty. I have examined the recorded Minutes of the September meeting and find no mention of such a case in the medical, accident prevention, or claims sections, of that meeting.

In the Province of Alberta, The Workmen's Compensation Board has had in force since 1928 regulations for the protection of workmen from the hazards of intoxication by carbon monoxide and other noxious gases. Garages and other industrial establishments are inspected by members of the accident prevention department of The Workmen's Compensation Board to insure that the protective regulations, which are enforceable by law, are being complied with. There are penalties for failure to comply.

The earliest record that I can find of a claim for carbon monoxide intoxication under the Alberta Board was in 1919. Three cases were reported that year. With the increase in industry since that time, there has naturally been an increase in the number of claims reported. In 1954 there were 83 claims for workmen overcome by fumes. In some of these the offending gas was hydrogen sulphide, and in others carbon monoxide.

Of course every claim has to meet the tests of thorough investigation, the chief obstacle being the inaccuracy of reports.

H. H. HEPBURN, M.D.,
Chief Medical Officer.
The Workmen's Compensation Board,
Edmonton, Alberta,
February 17, 1958.

CARBON MONOXIDE POISONING

[*Dr. Katz was informed of the contents of Dr. Hepburn's letter. His comments are as follows:*]

To the Editor:

I will deal with Dr. Hepburn's points as they occur in his letter but I would like to preface my remarks with a general discussion.

There are two possible approaches to the problem of carbon monoxide asphyxia. The first, which has been adequately covered by the literature, deals with the acute cases of severe intoxication, often unconscious at the time, occurring in industries in which the hazards have been surveyed and are well known. The second approach, which has not been stressed to as great an extent in the literature, deals with milder cases of "chronic carbon monoxide poisoning", i.e. recurrent exposure to toxic concentrations of CO for varying periods. These patients go to their general practitioner seeking diagnosis and treatment and are easily misdiagnosed if a carboxyhæmoglobin test of the blood is not performed. The point of the article which Dr. Hepburn seems to have missed is this "clinical" approach.

In the first case in the series referred to in the article (A.S.) the diagnosis was missed when his illness was in the acute severe stage. I saw him eight months later when he presented as a case of "chronic" carbon monoxide poisoning. This is the diagnosis which was sent to the Saskatchewan Workmen's Compensation Board in March 1954, along with a report from the Regina Provincial Laboratory of a carboxyhæmoglobin level of 18.5%.

In preparing the article the problem of nomenclature arose and I declined to make an artificial classification of "acute" and "chronic" CO asphyxia, as they represent different degrees of the same process.

I also declined to go into the long and frustrating correspondence that transpired between myself and the Saskatchewan W.C.B. for the next eight months before the case was accepted for compensation. This correspondence culminated in a letter sent to me by the Saskatchewan W.C.B. in December 1954, to which I made reference in the sentences which appeared in the article—"This case was discussed at the annual convention of compensation boards in December 1954. None of the medical representatives could recall a previous claim for this condition."

Dr. Hepburn makes no mention of any correspondence with the W.C.B. in Saskatchewan where all the work took place. From the contents of his letter it would appear:

(a) That the annual convention was held in September.

(b) That the case was not considered of sufficient importance to have received *formal* discussion and thus be included in the minutes.

(c) That the Alberta Workmen's Compensation Board received in 1954 eighty-three claims for "workmen overcome by fumes".

Dr. Hepburn does not state what percentage of these workmen overcome by "fumes" were suffering from carbon monoxide asphyxia as such. Nor does he state that all of the claims were actually paid. It would be interesting to know whether any of these cases had a carboxyhæmoglobin estimation of the blood performed.

I have asked for copies of the correspondence from the Saskatchewan W.C.B. to myself concerning the case in question and will be glad to forward same on request.

I trust the above will help to clarify matters.

2020 Alta Vista Drive, M. KATZ, M.D.
Ottawa, Ont.,
February 26, 1958.

THE HOSPITAL, THE ELDERLY, AND THE MENTALLY ILL

To the Editor:

May I refer to your editorial of February 1, 1958, entitled "The Hospital, the Elderly, and the Mentally Ill"? Since my experience is chiefly with the elderly, I wish to comment on that part of the editorial and particularly on the paragraph describing the practice of admitting patients regularly for a six-weeks' period to hospital beds alternating with a six-weeks' period at home. I believe this suggestion would alarm and distress most hospital administrators and hospital medical staffs in this country.

Probably no one nowadays would suggest that an old person suffering from disease should be deprived of treatment that would be given to younger persons whether suffering from pneumonia, myocardial infarction, "stroke" or other condition. However, as you point out in the editorial, the expense of hospital treatment is constantly rising, partly because of the great concentration of skill and resources in modern hospitals.

We therefore must make sure that no one is treated in hospital who would be better treated at home, and home-care programs aim at that. We must also make sure that when a person no longer is benefiting from care in "acute beds" (for want of a better term) in hospital, he should be cared for elsewhere, if he cannot go home.

If he is not independent enough in personal care to go to an old people's home, and he requires nursing care, he should receive it in a long-stay section of *that hospital* where he will remain under supervision of the doctors who know his case, and will continue to be assessed regularly at intervals for progress or as needing other therapy. If he goes to a chronic-sick hospital outside such supervision, he may be forgotten, as was a woman who spent 20 years in hospital before obtaining, accidentally, several months of rehabilitation in another hospital which enabled her to be discharged (see Bayne and Warren, *Lancet*, 1: 1317, 1955). Cases of mental deterioration in the elderly may also be accommodated in such sections, or in special old people's homes (such as the Hill Homes in London, England).

Given such an arrangement of home-care programs, hospital, and long-stay section, the practice of admitting patients for fixed periods to "acute" hospital beds seems irrational. If they require hospital care they should receive it for as long as they need it, but no more. However, admitting patients for fixed periods in order to relieve their family of a burdensome care is distinctly worth while and works well, but such cases usually can be cared for in the long-stay section.

I believe also that we should establish a close link between hospitals and old people's homes, as exist in some areas in Britain and Scandinavia, which I have seen for myself. In this way, occupants of old people's homes who become ill would be transferred to hospital *where they belong* and not to the home infirmary, which often lacks any extra facilities except silence. This link would also facilitate the transfer of patients from hospital who need the accommodation of an old people's home.

If these departments and links are formed, we need not fear the influx of elderly people into hospital with the establishment of a National Health System; indeed we would welcome it for it would mean that at last they were getting the treatment they needed and deserved. To do this, let us be sure we get the "right patient in the right bed".

J. R. D. BAYNE, M.D.
313 High Street,
Sherbrooke, Que.,
February 12, 1958.

THE LONDON LETTER

(From our own correspondent)

THE ROYAL COMMISSION

It was an astute move on the part of the Prime Minister to refer the dispute on doctors' pay to a Royal Commission. How astute is becoming increasingly evident as the different sections of the profession appear before the Commission and are subjected, in public, to a searching cross-examination. Comparisons are always invidious, and the attempt to justify the demand for increased pay on the grounds that these are justified by comparison with remuneration in other professions—"the Jones's," as they have come to be known in this context—is threatening to have an unpleasant boomerang effect. At a recent session of the commission, for instance, the chairman pointed out that in his view other professions suffered hardships comparable to those of medicine, and another member of the Commission said that a mining engineer had a more constant anxiety than any doctor and was called out of bed more than any two doctors. Even more disturbing is the way in which divisions within the profession are being accentuated and publicized. It is indeed a sad day when the council of the British Medical Association finds it necessary to pass the following vote of censure on a former President of the Royal College of Physicians: "That this Council has noted Lord Moran's remarks to the Royal Commission on the status of the general practitioner in relation to the consultant and regrets that a statement so manifestly false should ever have been made".

To many members of the profession all this seems like shadow-boxing. The substance is not pay but conditions of service, and this, it is contended, is being neglected. Last year a special representative meeting of the British Medical Association instructed the council "to institute with some degree of urgency an inquiry into the whole field of medical services in the light of experience gained of the N.H.S. since 1948 and to consider alternative schemes". More than one correspondent has recently written to the *British Medical Journal* asking, in the words of one correspondent, "that the profession be told why this investigation committee has not been set up and when it is to start to function".

B.M.A. AND B.B.C.

In two successive issues the *British Medical Journal* has published editorials strongly criticizing the British Broadcasting Corporation for including "live operations" in a weekly series, "Your life in their hands", which the Corporation is putting on on television. The series is intended to illustrate research and treatment in hospitals in this country. According to the *British Medical Journal*, the B.B.C. is "determined to make people's flesh creep". It adds: "It will probably succeed but many doctors will have little doubt that the effect will be to heighten people's anxiety about the state of their own bodies and their own health and increase the hypochondria and neurosis which are all too prevalent in so-called civilized societies today". It is not only the B.B.C. which is criticized, however. "Though the anonymity of the doctors is being preserved—for what that is worth in this publicity-seeking age—their colleagues may well think it is demeaning for doctors and nurses to appear as mummers on the television screen in order to provide entertainment for the British public". What lends piquancy to the controversy is that some of the best known hospitals in the country, including the Queen Elizabeth Hospital, Birmingham, and the Royal Infirmary, Edinburgh, are participating in the series.

These two editorial pronouncements were followed by a statement issued by the council of the British Medical Association, expressing "great regret" that be-

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fore the production of the series the B.B.C. had not discussed it with the Association. It further expressed the view that recent programmes in the series had caused anxiety to some members of the public as well as to doctors, and continued: "The council is firmly of the opinion that the emphasis in television and sound broadcasting programmes of a medical nature should be on health rather than on the sensational presentation of disease."

COLLEGE OF GENERAL PRACTITIONERS

Permission has now been granted by the London County Council for the new headquarters of the College of General Practitioners to be built alongside the Royal College of Surgeons in Lincoln's Inn Fields. The new building—the gift of an anonymous donor—will contain a conference hall, lecture theatre, library, museum, council chamber, committee rooms, and restaurant. An important feature will be the equipment and premises demonstration rooms, where apparatus used by family doctors throughout the Commonwealth will be displayed, together with models and drawings of different types of premises. Other parts of the building will be allocated to undergraduate and postgraduate education, and the college's research headquarters which will include a records unit and a statistical department. There is to be an underground garage.

NEW OPHTHALMIC UNIT

In 1948, the Faculty of Ophthalmologists recommended the Ministry of Health to establish regional ophthalmic surgical centres, each with a minimum of 25 beds, to replace the existing pattern of individual ophthalmic beds scattered throughout general hospitals. It was stressed that this was the only way in which standards of ophthalmic treatment could be maintained and enhanced. Naturally, nothing was done about this recommendation which, like so many other constructive documents, was presumably pigeon-holed in the Ministry archives. Three years ago, however, the first of these units was set up in Middlesex, and has fully justified its existence. The second one has now been opened as the result of the initiative of the North-West Metropolitan Hospital Regional Board—and also in Middlesex. It contains 26 beds and will provide in-patient facilities for three hospitals. It will not be concerned with outpatients. In opening it, Sir Stewart Duke-Elder expressed the hope that 'all England will do tomorrow what this regional board has done today.'

WILLIAM A. R. THOMSON

London,
March 1958.

ABSTRACTS *from current literature*

MEDICINE

Clinical Aspects of Cerebral Vascular Insufficiency.
E. CORDAY AND S. F. ROTHENBERG: *Ann. Int. Med.*, 47: 626, 1957.

Cerebral angiospasm has been thought to cause transient cerebral disorders. Experimental evidence strongly suggests that spasm does not occur in the human cerebral vessels, and thus cannot be responsible for cerebral disturbances.

The concept of cerebral vascular insufficiency is offered as an explanation of a variety of hitherto vaguely understood clinical cerebral phenomena. As a result of anatomic and physiologic considerations and experimental investigations, it is believed that in the presence of systemic hypotension or reduced cardiac output, the collateral circulation of the brain fails to supply the requirements of the cerebral tissue whose arterial flow has been compromised. If the systemic pressure is raised promptly to normal levels, the collateral circulation again becomes adequate and the cerebral signs and symptoms quickly disappear. If the hypotensive state is allowed to persist, permanent cerebral damage will result. It is important to prevent a drop in cardiac output or systemic blood pressure in the patient with narrowed cerebral arteries. If hypotension or a drop in cardiac output does occur, it is imperative to restore blood pressure promptly by blood transfusion or administration of vasopressor agents.

Twenty-two clinical conditions are discussed in which the phenomena of cerebral vascular insufficiency have been observed. In each condition, systemic hypotension, a drop in cardiac output, or a diversion of blood from the brain occurred in the presence of cerebral vascular narrowing.

S. J. SHANE

Bronchiectasis and Acute Pneumonia.
W. RUBERMAN *et al.*: *Am. Rev. Tuberc.*, 76: 761, 1957.

Out of a group of 1711 patients with recent acute pneumonia, 69 were studied and 29 of these were found to have bronchiectasis. One instance of reversion to normal of a previously abnormal bronchogram was discovered when repeat studies were performed on 14 bronchiectatic patients. In 10 other patients the repeat bronchograms were normal and it was concluded that the changes in the original study were due to artefacts. It is suggested that reversibility of an apparently mild bronchiectasis does occur but that this is rare, at least within several months of observation. During the course of the study, 5 additional cases of bronchiectasis were discovered in a group of 18 patients who did not have recent pneumonia but whose clinical history suggested the disease. In 4 of the 5 positive cases evidence of abnormalities, such as segmental atelectasis and localized emphysema, was present on the plain chest film. Six of 7 patients with bronchial asthma especially selected from a larger group of asthmatic subjects because of a history of chronic cough and pulmonary infections were found to have normal bronchograms. The seventh had an unusual dilatation of an intermediate bronchus. It is concluded that bronchiectasis rarely is the inciting factor in ordinary bronchial asthma. Bronchiectasis should be suspected when the roentgenogram shows very slow resolution of the pneumonic process, and persistence of parenchymal rales and continuation of a productive cough are observed. Bronchography is indicated regardless of the strength of clinical suspicion since it alone provides objective evidence of the presence and extent of the disease. A repeat bronchogram should be done in all "borderline" cases. The relationship of the preceding pneumonia to the bronchiectasis is uncertain. While there is some evidence to suggest an etiologic role for the acute infection, this is not sufficient to be conclusive.

S. J. SHANE

Chronic Constrictive Pericarditis; Roentgenologic Findings in 35 Surgically Proved Cases.
G. E. PLUM *et al.*: *Proc. Staff Meet. Mayo Clin.*, 32: 555, 1957.

Findings in 35 surgically proved cases of chronic constrictive pericarditis are presented. None of the roentgen findings are diagnostic without the usual clinical findings.

Calcification was observed in the pericardium in 46% of the patients before operation. It may be present in the pericardium without the clinical syndrome of constrictive pericarditis but when it is present with the usual clinical findings of this disease it is considered diagnostic. Posteroanterior roentgenographic views of the heart showed evidence of calcification along the upper left border in all cases, and it is suggested that this region should be carefully inspected when looking for pericardial calcification.

Decrease in amplitude of cardiac pulsations was present in 77% of 26 patients. Routine posteroanterior roentgenographic views showed increased transverse cardiac size in six patients, and heart size was at the upper limits of normal or slightly greater in three other patients.

Evidence of left atrial enlargement was present in seven patients, without clinical findings of mitral stenosis. It is suggested that the cause was constriction of the left ventricle or atrioventricular groove.

S. J. SHANE

Hæmodynamic Aspects of Diffuse Myocardial Fibrosis.
E. D. ROBIN AND C. S. BURWELL: *Circulation*, 16: 730, 1957.

The hæmodynamic findings in 11 patients with diffuse myocardial fibrosis are described. Myocardial fibrosis can lead to low output failure. The low output results from interference with diastolic filling and probably also from interference with systolic emptying of the heart. The interference with diastolic filling is related to changes in the volume-elasticity characteristics of the fibrotic myocardium. Two other disorders—constrictive pericarditis and endocardial fibroelastosis—with similar physiologic defects show hæmodynamic changes and a clinical picture similar to those of myocardial fibrosis.

The similarity of the hæmodynamic changes in myocardial fibrosis and constrictive pericarditis is striking. A low cardiac output, elevated pressures from peripheral veins to pulmonary "capillaries," a pressure plateau, a "diastolic dip," and an "atrial M" are all findings generally present in both diseases. This similarity stems from the fact that the two disorders cause similar changes in cardiac dynamics. Both lead to a somewhat rigid envelope of fibrous tissue that mechanically interferes with cardiac filling.

It is apparently not important that in the case of constrictive pericarditis this rigid area is located on the outside of the heart, while in the case of myocardial fibrosis it is situated within myocardium. Indeed, endocardial fibroelastosis, a disease in which a rigid layer of fibrous tissue invades the inner layer of the heart, has been reported to produce hæmodynamic changes identical with those described in myocardial fibrosis.

Since all 3 disorders—constrictive pericarditis, myocardial fibrosis, and endocardial fibroelastosis—have similar physiologic defects, it is not surprising that they present remarkably similar clinical pictures.

S. J. SHANE

Should We Treat Tuberculin Converters?
A. R. ALLEN: *Dis. Chest*, 32: 441, 1957.

Primary tuberculosis is not a localized disease but has demonstrable hæmatogenous dissemination in most cases. Seriousness varies with age, there being a high mortality under two years of age from these hæmatogenous complications; at two to five years significant numbers still develop tuberculous meningitis. We are finding as many new and as far advanced cases as were found five years ago. Serious tuberculosis still occurs in children.

Isoniazid alone will not prevent all hæmatogenous complications since over 10% of new admissions to a tuberculosis hospital have isoniazid-resistant tubercle bacilli. [This may be questioned.] No known safe drug combination will sterilize experimentally produced tuberculosis in animals; therefore it is not probable that primary lesions in humans will be so sterilized. With as little as 220 days of streptomycin, PAS, and isoniazid given concurrently, it has been possible to prevent the immediate hæmatogenous complications of primary tuberculosis. There is no assurance, however, that reinfection tuberculosis will not develop later.

A positive tuberculin test has less immunological value than was previously thought because it is from original foci that reinfection develops after puberty. The conversion of a skin test from positive back to negative was known to occur long before drug therapy was introduced and is no real indication that all of the tubercle bacilli are killed. While our antituberculous drugs seem less toxic in children than in adults, serious toxic reactions do occur, and treatment without adequate observation is not safe. S. J. SHANE

The Electrocardiogram and Vectorcardiogram of the Normal Infant.
I. L. ROSEN AND M. GARDBERG: *Dis. Chest*, 32: 493, 1957.

Electrocardiograms and vectorcardiograms (both the cube and tetrahedron frames of reference) were recorded on 300 infants one to 30 days of age. These were again studied at intervals of one to three months during the first year and every six months thereafter. Many have now reached the age of two and one-half years.

Considerable individual variation was found in the electrocardiogram. Most commonly there was a gradual change in direction of the mean QRS axis toward the left during infancy, but right axis deviation (110° to 120°) sometimes persisted throughout infancy. The development of left axis deviation after three months of age was not rare. The large R wave in Leads V_4r and V_1 may remain throughout infancy, but more commonly, gradually become smaller. Notching of the R wave in these leads was not seen in newborns but was not infrequent later. Small Q waves in these leads were not rare. Extremely high voltage may be seen in the chest leads, especially V_2 and V_4.

Correlation exists between the standard electrocardiogram and vectorcardiogram. The frontal plane QRS loop of the tetrahedron contains virtually identical information as the standard Einthoven leads; the horizontal plane loop of this system was found to be valueless. The horizontal loop of the cube usually was inscribed clockwise in newborns; later it became a figure-of-eight, and finally an open loop inscribed in a counter-clockwise manner. Great individual variation was encountered: a counter-clockwise loop may be seen

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in newborns and a clockwise loop in two-year-olds. The horizontal loop of the cube system could be predicted from the standard electrocardiogram fairly accurately.

The T waves of the limb leads do not differ among individuals as much as the QRS complexes nor do characteristic serial changes occur. During the first few days of life the T wave in Leads V4r and V1 is not infrequently upright, but this is uncommon at one month and was not seen by three months of age.

A theoretical analysis of the QRS loop of the infant, based on anatomical and physiological data, is presented. Theoretically the horizontal projection of the QRS loop would not be expected to be inscribed in a clockwise manner unless the right ventricle was thicker than the left. Since this is not true even during the first few months of life, it is believed that a distortion inherent in the cube system of vectorcardiography exaggerates the right ventricular effects to produce the clockwise inscribed loops seen in records made with this method. S. J. SHANE

Pain Syndromes Originating in the Vertebral Column and Their Amenability to Manipulative Treatment (in German).

R. A. LEEMANN: *Schweiz. med. Wchnschr.*, 87: 1289 and 1321, 1957.

It is increasingly obvious that many painful conditions of the back as well as of more peripheral parts are caused by functional or organic derangements of the spine. With this newer awareness has come improvement in diagnosis and treatment of many painful syndromes such as brachialgia paræsthetica nocturna or periarthritis humeroscapularis. The addition of "chiropractic" manœuvres to general management permits treatment of the cause rather than the effect.

It behooves formal medicine to reconsider its attitude towards manipulation if only because the conditions in which it can be applied are quite common. Chormley stated in 1951 that of 2000 patients seen at the Mayo Clinic that year because of backache 80% had changes in cartilage or joints of the vertebræ. In 30% radicular symptoms were present. These changes are partly "normal" aging processes and partly degenerative. They predominate in segments of the vertebral column subjected to increased mechanical strains and stresses. Frequently some displacement of vertebræ, usually backwards but sometimes forwards, occurs, but it rarely amounts to complete spondylolisthesis. Relative "lack of space" in the root canals commonly develops, but of itself does not necessarily produce symptoms. If additional factors such as trauma or infection supervene, the lack of space becomes absolute and causes root irritation. Zuckschwerdt points out that a vicious circle may develop, where the above changes combine with muscular spasm, further narrowing the root canal, increasing the pain and perpetuating it. The muscular spasm is of course painful in itself, and its prolonged presence may cause local reaction at its insertions (tendo-periostitis). Involvement of sympathetic fibres may produce circulatory and dystrophic disturbances, which may persist even after the original purely vertebral phase, and may cause permanent changes in bones, tendons and joint capsule. Thus a "primary neuralgia" of the shoulder is converted into humero-scapular periarthritis. Protrusion of intervertebral disc as a cause of root compression is well known, but swelling of protruded disc, hitherto asymptomatic, can cause the same symptoms. Subluxation of vertebræ is of particular importance in this connection. This is not a dislocation in the ordinary medical sense, but a locking similar to that in the knee with a loose meniscus. The locked intervertebral joint causes pain and inflammatory reaction, and can thus initiate a vicious circle. Abolition of such locking by chiropractic manœuvres would explain the startling relief obtained from them in such cases.

The author describes the painful syndromes which can be produced in this manner, and which are of "vertebral origin". They include a cranio-encephalic and cervico-brachial syndrome in the cervical spine; intercostal neuralgia, pseudo-angina, pseudo-pleural pain, abdominal and inguinal neuralgias (pseudo-appendicitis) in the thoracic spine; lumbago, sciatica and periarthritis coxæ in the lumbar spine. Diagnosis and differential diagnosis are of importance, the former because early recognition of the vertebral origin of a painful condition may prevent irreversible secondary changes, and the latter, because other conditions such as metastatic lesions of the vertebræ and diseases of the central nervous system, Pancoast tumours and others can mimic these syndromes. Their presence must be ruled out before undertaking chiropractic manipulations. Treatment is considered under the following headings: (a) anti-inflammatory; (b) reflex-blocking, analgesic and spasmolytic; (c) circulatory, trophic (ganglion and paravertebral anæsthesia; (d) mechanical (including extension and manipulation); (e) functional and postural, and (f) operative. In acute painful syndromes the author recommends manipulation (unlocking of vertebræ?) followed by short rest in bed and after-treatment by message and exercises.

In subacute forms, manipulation and mobilization of stiff joints must be accompanied by additional measures such as local anæsthesia or paravertebral block, hot packs, baths, massage and analgesics. In chronic cases manipulation is of little use, because of the predominance of secondary reactive changes. Extension, massage and exercises are of particular value in these cases.

After repeated warning that no type of manipulation should be carried out without x-ray examination, the author describes the "chiropractic" manœuvres he uses as well as the after-treatment. Experience of 100 manipulations in 80 patients over a 2-year period showed good results in all the recent cases. Complete failures were cases with symptoms of 8 months' or longer duration. W. GROBIN

Phonocardiography in Rheumatic Heart Disease.

V. V. SOLOVIEV: *Klinicheskaya Meditsina*, No. 7: 33, 1957.

On the basis of careful clinical examination which included phonocardiography in 100 patients with mitral heart disease, 37 were referred for commissurotomy. The operation was carried out in 33; thoracotomy only was performed in 3 (in 2 the mitral valve was inaccessible and one developed cerebral embolism during the operation); in one patient with moderate stenosis and marked insufficiency it was impossible to widen the narrowing. Eight of the 37 patients died during the operation or within the first two days following it.

The writer advocates the use of phonocardiography to supplement physical examination and clinical evaluation of patients with rheumatic heart disease. It complements and considerably refines the auscultative findings. It also helps indirectly to form an idea of

the pressure in the left auricle and thus the degree of stenosis, and hence to indicate more exactly which of the patients are candidates for commissurotomy. After operation even when results are favourable, the auscultative and phonocardiographic findings may change but little. W. GROBIN

SURGERY

Carcinoma of the Thyroid. A Review of One Hundred Cases.

R. KILPATRICK *et al.*: *Quart. J. Med.*, 26: 209, 1957.

There is a good deal of misunderstanding regarding the incidence of carcinoma of the thyroid, which is generally considered to be much more common than it actually is. It is a rare tumour, causing only 0.4% of all deaths from malignant disease. The diagnosis is a difficult one and can be made clinically only when the carcinoma has spread outside the thyroid. Even when thyroid tissue is examined histologically the diagnosis of carcinoma may remain in doubt.

The present study concerns 100 cases of thyroid carcinoma seen at the Sheffield National Centre for Radiotherapy since 1946. Eighty per cent were in women. Previous goitre was present in only 18%; hyperthyroidism co-existed in 7%. Eight patients were under the age of 35 and in three of these there was a history of previous radiation therapy for other conditions which would affect the thyroid region, suggesting the possible importance of radiation in the etiology of the carcinoma.

The majority of thyroid carcinomas do not arise in adenomatous goitres but in apparently normal glands. Prognosis is directly related to the histological appearance. Late recurrence is common and five-year survival figures are of little value in assessing treatment.

NORMAN S. SKINNER

The Use of Caval Catheterization in Cases of Severe Oliguria and Anuria.

J. W. CHAMBERS AND G. SMITH: *Brit. J. Surg.*, 45: 160, 1957.

Severe oliguria due to circulatory renal insufficiency or parenchymal renal damage can often be treated successfully if the patient can be kept alive and in a near physiological state. The administration of sufficient glucose in limited amounts of water by the intravenous route is difficult. It is recommended that a catheter passed into the vena cava above the renal veins via the upper saphenous vein be used. Heparin and 50% glucose are thus administered.

No pulmonary embolism or other untoward sequelæ were seen in the 29 cases treated in Glasgow. The daily basal intake of water was restricted to 700 c.c. of 50% glucose. In 8 cases this could not be given by indwelling gastric tube. The caval route was used with success in 6 out of 10 cases. BURNS PLEWES

Recurrence after Resection for Bronchiectasis.

J. T. CHESTERMAN: *Brit. J. Surg.*, 45: 155, 1957.

In a series of resections for bronchiectasis there were 19 cases of recurrence of the lesion. The recurrence was always of the cystic type and further surgery was satisfactory in half of them. There was a high rate of recurrence in children and after resections for bilateral disease.

The operative mortality of unilateral subtotal resection was nil. The recurrence rate was 9% over-all.

BURNS PLEWES

Problems in the Surgical Management of Thymic Tumour.

L. SOUTTER *et al.*: *Ann. Surg.*, 146: 424, 1957.

Tumours of the thymus are difficult to classify and the great interest is in their association with several diseases. About half of them are malignant and about a third invade adjacent mediastinal structures. A large piece of each tumour is needed for pathological diagnosis. The superior vena cava syndrome is often a sign of a malignant thymoma.

Treatment is early surgical removal. Though the malignant tumours are slow to metastasize, invasion of great vessels makes excision difficult. Radiation treatment is often effective.

Myasthenia gravis is associated with thymoma in 30% of cases and of these 40% are malignant. Thymomas may rarely be associated with Cushing's syndrome. Idiopathic hypoplastic anæmia has also been associated with thymic neoplasm, as has agammaglobulinæmia. The latter has been discovered after thymectomy.

BURNS PLEWES

Surgical Treatment of Cavitary and Non-Cavitary Tuberculosis in the Non-Infectious Patient.

J. W. BELL: *Dis. Chest*, 32: 562, 1957.

Indications for pulmonary resection in the non-infectious patient with a closed tuberculous lesion are presented. The relapse rate of 14% without resection in 136 patients is contrasted with that of 9% in 90 resected patients.

In the sputum-negative patient with a residual open lesion a comparison of 118 non-resected with 153 resected patients gave a relapse incidence of 43% for the non-reseoted group extending through three post-treatment years and 9% for the surgical group. At present 90 out of 118 medical patients (76%) are considered to have inactive disease as against 133 of 155 surgical patients (87%).

In the "open-negatives" the indications for surgery have included all patients who were satisfactory candidates. This policy has been supported by the relatively high relapse rate (43%) in non-resected patients and the recovery of viable tubercle bacilli in 38% of the resected specimens.

The problem of selection may well resolve itself if pulmonary surgery is reserved for those patients whose lesions have demonstrated their instability during the treatment period or thereafter. S. J. SHANE

Multiple Malignant Primary Neoplasms.

A. F. WALLACE: *Brit. J. Surg.*, 45: 165, 1957.

During five years 3006 patients with malignant disease were seen and followed up at University College Hospital, London. Of these 71 developed 2 primary tumours during the period, 35 others had a second primary within 5 years before or after the first, and 13 developed 3 or more primary tumours between 1946 and 1950. A few had 4 or 5 primary neoplasms. Multiple bladder and ovarian tumours were excluded.

The data suggest that there may be an increased incidence of carcinoma of the uterus and ovary in patients with carcinoma of the breast. But a patient with carcinoma of the breast seems no more likely than anyone else with a neoplasm to develop a second primary tumour of the opposite breast.

Of 20 patients who attend hospital with a malignant tumour, one will develop another primary later. Certain

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sites such as the skin, mouth, ovaries, breast, liver, large bowel and urinary bladder show generalized changes which predispose to the development of multiple carcinoma. Of course the first malignancy must be slow-growing or successfully treated for a second primary to be detected. BURNS PLEWES

Studies on Hypothermia in Abdominal Surgery.
W. W. B. HYNDMAN *et al.*: *A.M.A. Arch Surg.*, 75: 500, 1957.

Occlusion of the abdominal aorta above the cœliac axis results in spinal cord damage, for the latter is the organ most vulnerable to ischæmia. Liver damage is also a danger. That these complications of obtaining a bloodless operative field may be reduced by hypothermia was demonstrated experimentally.

The control series of dogs demonstrated that hindquarter paralysis followed aortic occlusion above the cœliac axis for more than 15-20 minutes. With reduction of the body temperature to 28° C. the safe period was lengthened to upwards of an hour and it was found that a great deal of surgery could be performed in that time. The bloodless field is a great advantage: there is some œdema, vessels requiring ligation are easily seen, planes are clearly defined. Operations are performed with great rapidity, yet safely. Blood pressure remains stable. Total evisceration including hepatectomy was performed within the time limit of 60 minutes without appreciable postoperative bleeding. BURNS PLEWES

THERAPEUTICS

Concurrent Use of Pyrazinamide and Isoniazid in Treatment of Pulmonary Tuberculosis.
J. A. SCHWARTZ: *Dis. Chest*, 32: 455, 1957.

To evaluate the therapeutic efficacy of combined pyrazinamide and isoniazid, 58 patients with pulmonary tuberculosis were treated in five random groups.

Combined pyrazinamide and isoniazid therapy was slightly more effective in causing bacterial conversion of sputum from patients with streptomycin-sensitive *M. tuberculosis* than combinations of streptomycin and para-aminosalicylic acid, streptomycin and isoniazid, and isoniazid and para-aminosalicylic acid. In addition the conversion of sputum to negative took place somewhat more rapidly with pyrazinamide and isoniazid than with the other forms of treatment. However, radiological improvement was less rapid with combined pyrazinamide and isoniazid. Toxicity of combined pyrazinamide and isoniazid was greater than that obtained with streptomycin and isoniazid, streptomycin and para-aminosalicylic acid, or isoniazid and para-aminosalicylic acid. This combination, therefore, has only a limited field of application in the treatment of tuberculosis. S. J. SHANE

PÆDIATRICS

Changing Spectrum of Childhood Diseases (in German).
A. WINDORFER: *Deutsche med. Wchnschr.*, 82: 1596. and 1646, 1957.

Changes are occurring both in the epidemiology and in the clinical picture of many diseases. Some causes for this are known and some remain a mystery. Thus the incidence of scarlet fever has remained essentially unchanged, but it became much milder long before specific treatment became available. The various diseases are considered in three groups. (1) Diseases of infants: On the one hand, there is a decrease in infant mortality, and on the other a disturbing rise in the incidence of congenital malformations and prematurity. Rickets and scurvy have almost disappeared but there is increased recognition of retrolental fibroplasia, interstitial penumonia and acute epidemic myocarditis. (2) Infectious diseases: Prophylactic immunization, chemotherapy and antibiotics have brought spectacular changes in this group. In diseases like measles and pertussis, complications have been greatly reduced. On the other hand, there is a universal increase in epidemics of certain virus diseases (poliomyelitis, infectious mononucleosis). (3) Non-infectious diseases: Because of the survival of diabetics, an increasing number of people transmit the disease every year.

Recently developed operative treatment has changed the picture of congenital heart disease. On the negative side there has been an alarming increase in leukæmia and malignant tumours. Opitz's survey of leukæmia in eight large children's hospitals in Germany showed an incidence as follows: 1920-30: 97 cases, 1930-40: 191 cases, 1940-50: 295 cases. The incidence of malignant tumours has risen from 0.7 per 10,000 children in 1892-94 to 1.7 in 1952.

Among the important causes of the changes discussed by the author are infection and exposure of pregnant women to radiation (congenital malformations, leukæmia) and increased exposure to drugs, vaccines, sera and antibiotics, seen as the reason for increased allergic reactivity, which has been estimated by Hahnhart to have an incidence of 20% (40% in the upper classes). Mental disorders, neuroses, enuresis, and speech and sleep disorders are all seen more frequently in children. Child psychiatry as a specialty has emerged in recent years as an answer to this increase.

The alarming increase in accidental death has made it the most important cause of death in children from 1-15 years of age in Western Germany. Of 3111 accidental deaths in 1954, 1176 were traffic fatalities.
W. GROBIN

INDUSTRIAL MEDICINE

Current Hazards of Toxic Beryllium Compounds.
HARRIET L. HARDY: *New England J. Med.*, 256: 715, 1957.

That certain compounds of beryllium can produce a systemic disease is recognized by many physicians. Diagnosis may present a problem. Because pulmonary involvement causes the syndrome usually present, it may be difficult to differentiate between beryllium disease, miliary tuberculosis and Boeck's sarcoid. Another fact to be considered is the probable delay between exposure to the toxic compounds and the appearance of signs of disease. Diagnosis rests on strong epidemiologic evidence and on the finding of beryllium by spectrographic analysis in urine or in biopsied or autopsied tissue.

A careful occupational history is important. Operations using beryllium compounds which are known to have produced illness are: extraction of beryllium, fluorescent-powder manufacturing, fluorescent lamp

manufacturing, beryllium metallurgy, ceramic operations, and use of alloys containing beryllium. Although the fluorescent lamp industry stopped using beryllium-containing compounds about July 1949, cases are still being diagnosed from this source owing to the delay in onset. Furthermore, workers who have suffered acute poisoning may, after an interval of apparent good health, manifest chronic poisoning.

Since the introduction of proper engineering protection by industry, acute poisoning is no longer seen. For the chronic form, steroid therapy appears to be of value.

A Beryllium Case Registry has been established at the Massachusetts General Hospital, where facilities are available to help any physician establish correct diagnosis in a case of suspected beryllium disease.

MARGARET H. WILTON

Health Profile of Lumber Mill Employees.

R. G. LEO, A. H. DYSTERHEFT AND G. G. MERKEL: *Indust. Med.*, 26: 377, 1957.

From the workers' point of view the thorough physical examinations conducted during the summer of 1956 among the 476 employees of the South West Lumber Mills at McNary, Arizona, yielded valuable information. Many previously undiscovered conditions were diagnosed and later treated. From the physicians' point of view it was educational. The results of the examinations are summarized in this article.

A brief history was followed by a thorough physical examination and the following studies: blood type and Rh, sedimentation rate, blood Wassermann reaction, complete urinalysis, and posterior-anterior chest radiographs. Further tests were conducted as needed.

Analysis of the data with regard to distribution and frequency of findings indicated the following: (1) Hypertension and arteriosclerosis led the list. Among the males, 12% of the white, 26% of the Negro, 22% of the Mexican, and 27% of the Indian, had hypertension. (2) Almost a fourth of the males were obese. (3) Many workers, including some who wore glasses, were found to have refractive errors. (4) On laboratory examination, 26 employees were shown to have positive serological tests for syphilis. Five of these had not previously been known as positive; the remainder had been positive in 1951 and each had previously received at least six million units of penicillin. (5) Eight per cent of all urine specimens from males showed some abnormality. (6) Some hearing loss was evident in 19% of the male workers. It was not found among female employees.

That the program was worthwhile to the company is indicated by the fact that five workers were found to be holding positions definitely unsuited to their state of health. Three were retired—one with severe hypertensive-cardiovascular disease in failure, one with an aortic aneurysm, and one with cor pulmonale in failure. The other two—one with an old posterior myocardial infarction, and one with angina pectoris—were reassigned to less strenuous positions. In this way serious accidents were probably avoided. Also after some partial hearing loss had been demonstrated in 19% of all the men examined, the company accepted the recommendation to supply ear plugs to those employees who work in noisy surroundings.

MARGARET H. WILTON

OBITUARIES

DR. HARRY DICKMAN CHEIFETZ died in Montreal on February 17 after a brief illness. He received his medical education at McGill University, graduating in 1931. He was on the staff of the Jewish General Hospital and from 1936 to 1948 was an attending physician at the Herzl Health Centre. He was a member of the Montreal Chirurgical Society and of the Montreal Clinical Society.

Dr. Cheifetz is survived by his widow and two sons.

DR. ALFRED HAMMAN, 91, died in the Taber Municipal Hospital, Alta., on February 9. He was born in Knutsford, Cheshire, England, and came to Canada in 1888. He received his medical education at the University of Manitoba, graduating in 1895. He did postgraduate work in London, England, and in Edinburgh and Glasgow, Scotland. On his return to Canada, Dr. Hamman practised in Wawanesa, Man., from 1897 to 1906 and in Heward, Sask., from 1906 to 1909. In 1909 he moved to Taber, where he practised until his retirement and where he served as coroner until 1948.

He is survived by two sons and six daughters.

DR. ELGIN ROWLAND HASTINGS died at St. Michael's Hospital, Toronto, Ont., on February 22. He was born at Stouffville, Ont., and graduated in medicine from the University of Toronto in 1913. He served his internship at St. Michael's Hospital before setting up in practice in East Toronto.

Dr. Hastings is survived by his widow and a son, Dr. John E. F. Hastings.

DR. FORTUNAT PAQUIN, 74, died on January 25 after a long illness. He graduated in medicine from Laval University, Quebec, in 1912 and for a number of years was in general practice at Three Rivers, P.Q., before becoming a member of the staff at St. Joseph's Hospital.

He is survived by his widow and one daughter.

DR. CHARLES C. STEWART

AN APPRECIATION

Charles C. Stewart, M.D., C.M., D.A., who until he retired in 1953 was Director of the Department of Anæsthesia at the Montreal General Hospital, died in the hospital on January 19, 1958, at the age of 70.

Dr. Stewart gave up active practice last May and moved to Knowlton, Quebec. Two weeks later he suffered a mild "stroke" but recovered sufficiently to visit his boyhood home in Perth, Scotland, during the summer. After his return he had a recurrence of the infarction and was confined to bed.

He was an undergraduate at McGill University when World War I broke out, and along with other students in his class he enlisted with No. 3 General Hospital which was sent overseas very soon after its formation. When this unit went to France he was pressed into service to give anæsthetics, and eventually was given sergeant's stripes. He performed his duties so well that he was sent as anæsthetist with a mobile surgical team to Passchendaele. On this occasion his special skill with nitrous oxide came to the attention of a team of British surgeons and they requisitioned him to give gas to several of their seriously wounded soldiers.

After the war he resumed his studies at McGill and as a student lived in the General Hospital and gave anæsthetics in his free time. After graduation in 1921 he worked in the hospital but most of his practice was free-lance anæsthesia outside. He was appointed Director of the Department of Anæsthesia in 1925 and continued in this position until 1953 when he joined the consultant staff. He obtained his D.A. in 1935 and was active in teaching clinical anæsthesia to McGill medical and dental students.

The patients who came to the old General were from the poorer section of the city in which the hospital was located. Dr. Stewart therefore personally gave or supervised anæsthetics to many thousands of the sick poor of Montreal during his 28 years as Chief of the Department. He will be remembered by many of the nurses, for he always had a quiet and comforting word for an awe-struck student in the operating room. The interns learning anæsthesia and his residents will remember him for his kindness and understanding.

Dr. Stewart was an original member of the Anæsthesia Travel Club and when this group formed the American Academy of Anæsthesiologists in 1951 he was invited to join them.

He was a personal friend of Dr. Frank McMechan and of many other pioneers in the specialty of anæsthesia.

Those of us who worked with C. C. Stewart regret his passing and extend to Mrs. Stewart and the three children our sincerest sympathy. R.F.

DR. WALTER F. LANGRILL, 88, died on February 24 at the General Hospital, Hamilton, Ont. He was born in Jarvis, Ont., and graduated in medicine from the University of Toronto in 1891. After two years in London, England, Berlin and Vienna, he began practising in Chicago but returned to Hamilton to take charge of his father's practice. He was medical health officer until 1905 when he was appointed medical superintendent of the city hospital. He was one of the oldest living presidents of the Hamilton Academy of Medicine.

Dr. Langrill is survived by his daughter.

DR. WALTER FRANCIS LANGRILL

AN APPRECIATION

The passing of Walter Langrill, in his 89th year, breaks a link with the early days of Canadian medicine. The son of a physician, and a graduate of the University of Toronto with the class of 1891, he prepared himself for his life's work by years of postgraduate study in Europe and America. Returning to Hamilton, he shortly accepted the post of Medical Officer of Health of the small but growing city. In 1905, he was persuaded to accept the position of Medical Superintendent of the Hamilton City Hospital, then of 200 beds. For 35 years he guided the destinies of this growing institution, through difficulties and vicissitudes, and on his retirement in 1939, he could contemplate a Hamilton General Hospital of 1000 beds, whose fine buildings, modern facilities, excellent staff and outstanding training school for nurses, gave it a leading place among the larger Canadian general hospitals. He was a great administrator, a great clinician, a great humanitarian and a great Canadian. He has left a rich heritage, and, to quote the immortal John McCrae:

"God meteth him not less but rather more
Because he sowed and other reaped his store."

He was an outstanding hospital administrator, through an era when the medical superintendent was necessarily a good clinician. Hundreds of physicians can testify to his diagnostic ability, his clinical acumen and his talent for teaching. The training school for nurses was a special interest, and his understanding of its problems and his whole-hearted support were major factors in raising the school to the high position which it occupies among the training schools of this continent.

He was a life-long student, not only of medicine, but of the humanities. He loved human nature, shared fully in its joys and sorrows, and understood its problems. His capacity for friendship, his kindly personality and his wise counsel are recalled with gratitude by a host of physicians, graduate nurses and associates.

The Hamilton General Hospital, with its fine buildings, its unexcelled facilities, its dedicated staff and its continent-wide reputation, is a tribute to him. His portrait hangs in the hall of the Nurses' Residence. There could be no more fitting inscription underneath than this:

"Si monumentum requiris, circumspice"

W.J.D.

DR. ERNEST JONES. We regret to announce the death of Dr. Ernest Jones of London, England, on February 11 at the age of 79. Dr. Jones, who was honorary president of the International Psychoanalytical Association and the biographer of Freud, whose disciple he was for many years, had a link with Toronto. In 1909, at the suggestion of Osler, Dr. Jones was invited to take charge of a psychiatric clinic in Toronto, but left again for England in 1911. Like Freud, Dr. Jones was first attracted to neurology, being house surgeon to the great neurosurgeon, Victor Horsley, at University College Hospital, London. In 1905 he became acquainted with Freud's writings and conducted the first psychoanalysis to take place outside the German-speaking countries. He met Freud in 1908 and from then on was his faithful disciple, as the recently published biography of Freud clearly shows. Dr. Jones dedicated his life to the propagation of Freud's doctrines in England, and was mainly instrumental in getting the master out of Austria in 1939, when the *Anschluss* took place.

FORTHCOMING MEETINGS

CANADA

COLLEGE OF GENERAL PRACTICE OF CANADA, Second Scientific Assembly, Winnipeg, Man. (Dr. W. V. Johnston, Executive Director, College of General Practice of Canada, 176 St. George St., Toronto 5, Ont.) April 14-16, 1958.

AMERICAN ACADEMY OF DENTAL MEDICINE, 12th Annual Meeting, Montreal, Que. (Dr. Louis J. Rosen, Convention Chairman, 3465 Côte des Neiges Road, Montreal, Que.) May 28-31, 1958.

CANADIAN FEDERATION OF BIOLOGICAL SOCIETIES (Canadian Physiological Society, Pharmacological Society of Canada, Canadian Association of Anatomists, Canadian Biochemical Society), First Annual Meeting, Kingston, Ont. (Dr. E. H. Bensley, Honorary Secretary of the Board, Canadian Federation of Biological Societies, Montreal General Hospital, 1650 Cedar Avenue, Montreal 25, P.Q.) June 7-11, 1958.

CANADIAN OTOLARYNGOLOGICAL SOCIETY (SOCIÉTÉ CANADIENNE D'OTOLARYNGOLOGIE), Annual Meeting, Halifax, N.S. (Dr. Donald M. MacRae, 324 Spring Garden Road, Halifax, N.S.) June 9-11, 1958.

CANADIAN TUBERCULOSIS ASSOCIATION, 58th Annual Meeting, Quebec City, P.Q. (Dr. G. J. Wherrett, Executive Secretary, Canadian Tuberculosis Association, 265 Elgin St., Ottawa 4, Ont.) June 9-12, 1958.

CANADIAN OPHTHALMOLOGICAL SOCIETY (Société Canadienne d'Ophtalmologie), 21st Annual Meeting, Halifax, N.S. (Dr. R. G. C. Kelly, Secretary, 90 St. Clair Ave. West, Toronto 7, Ont.) June 12-14, 1958.

CANADIAN MEDICAL ASSOCIATION, 91st Annual Meeting, Halifax, Nova Scotia. (Dr. A. D. Kelly, General Secretary, The Canadian Medical Association, 150 St. George Street, Toronto 5, Ont.) June 15-19, 1958.

THIRD CANADIAN CANCER RESEARCH CONFERENCE, Honey Harbour, Ont. (Dr. Robert L. Noble, Medical Research Laboratory, University of Western Ontario, London, Ont.) June 15-19, 1958.

CANADIAN PSYCHIATRIC ASSOCIATION, Annual Meeting, Halifax, Nova Scotia. (Dr. Charles Roberts, P.O. Box 6034, Montreal, Que.) June 20-21, 1958.

INTERNATIONAL FERTILITY ASSOCIATION, Windsor Hotel, Montreal, Que. (Dr. Walter W. Williams, 20 Magnolia Terrace, Springfield 8, Mass., U.S.A.) June 20-22, 1958.

INTERNATIONAL FEDERATION OF GYNÆCOLOGY AND OBSTETRICS, 2nd Congress, Montreal, P.Q. (Professor Léon Gérin-Lajoie, Suite 313, 1414 Drummond Street, Montreal, P.Q.) June 22-28, 1958.

10TH INTERNATIONAL CONGRESS OF GENETICS, Montreal, P.Q. (Mr. J. W. Boyes, General Secretary, 10th International Congress of Genetics, McGill University, Montreal, P.Q.) August 20-27, 1958.

UNITED STATES

FIFTH INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Philadelphia, Pa. (Dr. E. R. Loveland, Secretary-General, Fifth International Congress of Internal Medicine, 4200 Pine St., Philadelphia 4, Pa.) April 24-26, 1958.

INTERNATIONAL SOCIETY OF GASTROENTEROLOGY, 3rd World Congress, Washington, D.C. (Dr. H. M. Pollard, University Hospital, Ann Arbor, Michigan.) May 25-29, 1958.

AMERICAN GOITER ASSOCIATION, Annual Meeting, San Francisco, Cal. (Dr. John C. McClintock, Secretary, 149½ Washington Ave., Albany 10, New York.) June 17-19, 1958.

AMERICAN MEDICAL ASSOCIATION, Annual Meeting, San Francisco, California. (Dr. George Lull, 535 North Dearborn Street, Chicago 10, Ill.) June 23-27, 1958.

OTHER COUNTRIES

FIFTH BAHAMAS MEDICAL CONFERENCE, Nassau, Bahamas. (Dr. B. L. Frank, Organizing Physician, The Dolphin Hotel, Nassau, Bahamas.) April 1-12, 1958.

SEVENTH INTERNATIONAL CANCER CONGRESS, Royal Festival Hall, London, England. (Secretary-General, 7th International Cancer Congress, 45 Lincoln's Inn Fields, London, W.C.2, England.) July 6-12, 1958.

CONGRESS OF MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION, Bedford College, Regents Park, London, England. (Dr. Janet Aitken, 30a Acacia Road, London, N.W.8, England.) July 15-21, 1958.

PROVINCIAL NEWS

SASKATCHEWAN

The College of Medicine, University of Saskatchewan, has announced the resignation of Dr. R. B. Lynn, Assistant Professor of Surgery, who is moving to Kingston, and the appointment of Dr. C. M. Couves of Edmonton as from July 1. Dr. Couves received his B.A. at the University of Saskatchewan and his M.D. from Manitoba.

At the first meeting of the Council of the College of Physicians and Surgeons of Saskatchewan Dr. E. R. Stewardson of Moose Jaw was named President, with Dr. R. Inglis of Estevan as 1st Vice-President and Dr. A. J. M. Davies of Indian Head as 2nd Vice-President.

The Eight Annual Conference of the International Northern Great Plains Conference on Rehabilitation and Special Education is being held at the University of Saskatchewan, Saskatoon, on August 20, 21 and 22, 1958. The program will include talks on rehabilitation by several guest speakers as well as panel discussions and demonstrations. A special medical section of the program is under the chairmanship of Dr. T. E. Hunt of the University Hospital. Dr. M. G. P. Cameron of Saskatoon is the Secretary-Treasurer.

Tuition fees for most colleges at the University of Saskatchewan will be increased effective July 1, 1958, according to Dr. W. P. Thomson, President of the University. The only colleges not affected by the increase are Medicine, Graduate Studies and the School of Agriculture. The last increase in fees was in 1954.

A comparison of the new schedule with the present fees of the other three western universities shows that the University of Alberta fees are slightly lower, the fees of the University of Manitoba are approximately the same and the fees of the University of British Columbia are slightly higher.

At a recent survey made in Saskatoon a need for 200 additional hospital beds was forecast for the next 10 years. This was based on anticipated population growth and the present trends towards broader based medical care. The report was a special document prepared by the Saskatoon City Hospital's Committee on Future Expansion. It was set up last year to study long-range planning.

In a summary attached to the report the Committee tabulated six conclusions: (1) Population trends indicate a need in the city of from 200 to 300 additional hospital beds within the next 10 years. (2) A reasonable proportion of these for City Hospital would be from 50 to 100. (3) Approximately 60 additional beds in the hospital could be accommodated by existing facilities. (4) A 60-bed addition should not be contemplated unless it could be determined it would serve the city from a long-term point of view. (5) Alteration plans for the hospital's west wing should be carefully reviewed as to desirability. (6) If the plan is accepted, larger capital grants towards construction should be obtained to relieve the local taxpayer.

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In greater detail the report traced changing public emphasis on the services hospitals should provide. Generally, the report said, a hospital's functions were not only those of curative medicine, teaching and research. Now hospitals more and more are being regarded as community health centres where health education is provided and where other health problems revolved.

On April 10, 11, and 12, 1958, at the Regina General Hospital, there will be a refresher course in pædiatrics and obstetrics sponsored jointly by the College of Medicine, the College of Physicians and Surgeons of Saskatchewan, and the Saskatchewan Department of Public Health. Dr. John Stallworthy, F.R.C.S., of Oxford will be present as the special speaker on obstetrics. Dr. Russell Blattner, F.A.A.P., of Baylor University of Texas, will be the special speaker on pædiatrics. The program will cover various aspects of interest to physicians, especially those in general practice. There will be a number of short papers and several panel discussions as well as specially arranged grand rounds at Regina General Hospital.

Dr. Alexander Robertson, Lecturer in Social and Preventive Medicine at the Royal Free Hospital School of Medicine in the London School of Hygiene, has been appointed to the Chair in Social and Preventive Medicine at the University of Saskatchewan.

Dr. Robertson graduated from the University of Edinburgh and took part with Dr. Richard Scott in the development of the General Practice Teaching Unit in the Department of Social Medicine of that university. Receiving his Diploma in Public Health from the London School of Hygiene and Tropical Medicine, he was placed in charge of the Teaching School of Social and Preventive Medicine at the Royal Free Hospital.

Dr. Robertson is particularly interested in the training and the role of auxiliary workers in medicine such as social workers and public health nurses and in the dovetailing of the preventive and curative aspects of medical practice. It is expected that he will take up his duties at the University of Saskatchewan early this summer.

In view of the fact that there is no Children's Hospital in Western Canada between Winnipeg and Vancouver, Regina pædiatricians have advocated that a 200-bed Children's Hospital be built in Regina.

The Saskatchewan Court of Appeal has announced a decision on the constitutionality of the compulsory breathalizer test, under the amendment to the Vehicles Act passed at the last session of the Legislature in this province. In effect, the majority opinion held that results of alcohol tests were inadmissible in Criminal Code or drunken driving proceedings because the passage of the amendment represented an invasion of the criminal law field of the Federal Government and because of the stipulation of the criminal code that no person is required to give a sample of his breath and that refusal to do so cannot be used against him as evidence. The majority of the court also ruled that even though the results are not admissible in these criminal proceedings the amendment itself was within the province's powers.

This leaves the situation in this province confusing in some respects. Police who stop a driver who appears to be operating a vehicle while under the influence of alcohol still may request him to submit to an alcohol test. If he refuses to do so, the provincial authorities still may suspend his driving licence if the test discloses the presence of sufficient alcohol in his system to impair his driving abilities or to cause inebriation. This cannot be used as evidence in prosecutions for impaired or drunken driving, but the provincial authorities undoubtedly have the power to base licence suspensions on the tests, even if the driver wins the acquittal on the criminal charges. G. W. PEACOCK

MANITOBA

Commendation to Dr. C. Hamwee of Baldur for his prompt action which saved a life. A man of 22 was in Baldur medical nursing unit for a minor operation on January 29. The anæsthetic was being given prior to the operation when the patient's heart and breathing stopped. Artificial respiration and injections failed. The doctor then made an abdominal incision and massaged the heart for over 60 seconds before it started pulsating and breathing began. The patient is reported to be in fairly good condition.

Dr. E. W. McHenry, Professor of Nutrition, University of Toronto, was the guest speaker at a special meeting of the Scientific Club of Winnipeg. His subject was "Some Unsolved Problems in Nutrition Research" and he made a strong plea for research in pure science where there are still unexplored territories. Professor McHenry also addressed the medical students and the Department of Obstetrics and Gynæcology next morning on "Nutrition in Pregnancy".

Dr. R. K. Hay, F.R.C.S.(Eng.), late of the Department of Neurosurgery, Montreal General Hospital, is now associated with Dr. Oliver S. Waugh, Winnipeg Clinic, in the practice of neurosurgery.

Dr. J. C. Wong, assistant administrator of the Winnipeg General Hospital, left Winnipeg on March 1 to proceed to England and thence to Singapore where he will be medical superintendent of the general hospital of 1300 beds. While in England he will study under a grant of the Nuffield Foundation. ROSS MITCHELL

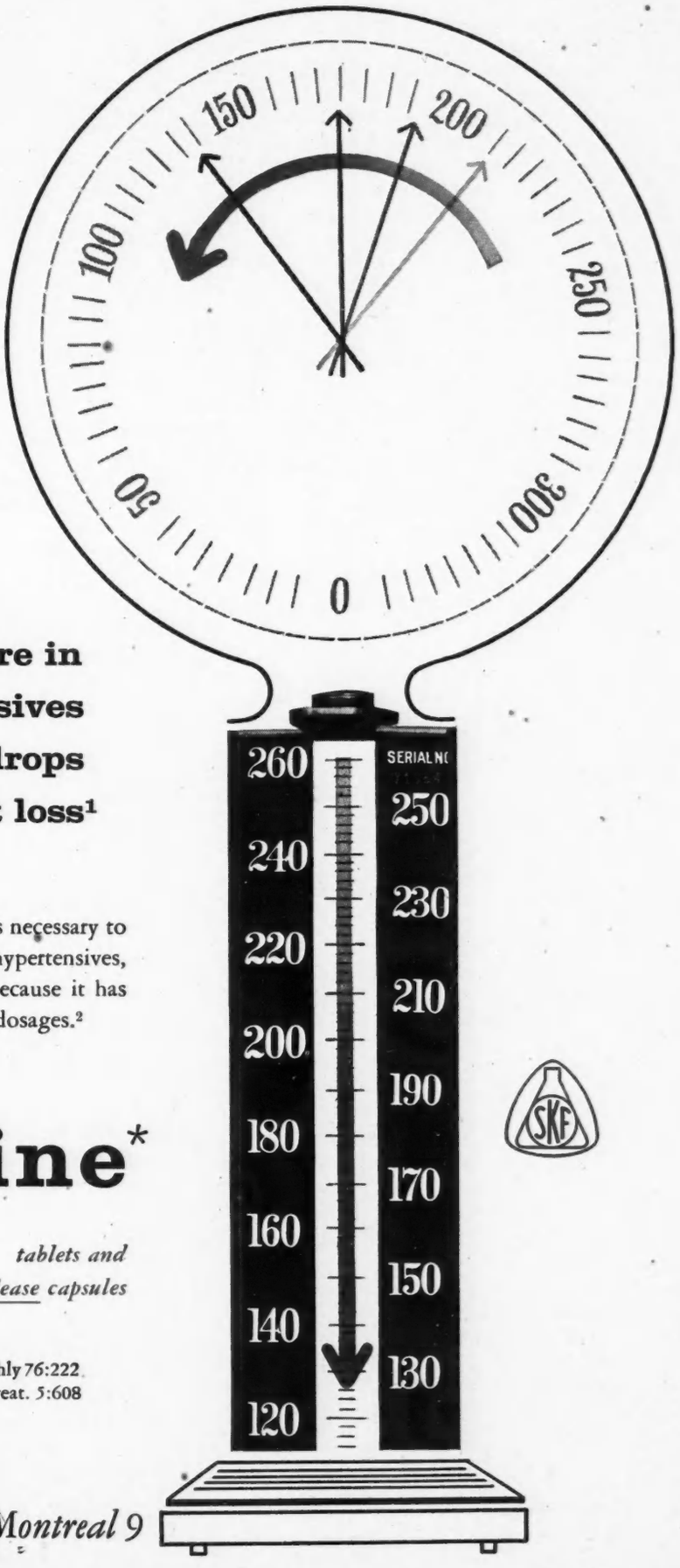
ONTARIO

For some years the University of Toronto Medical Alumni Association has conducted a panel discussion on general practice for the students in the last two years of the medical course and for recent interns.

This year it was held on February 18 in the new Lecture Room of the Toronto General Hospital, and the Association is very much indebted to the management of the hospital for this privilege and for the social entertainment that followed the meeting.

The doctors selected to tell of their experience derived from practice came from both rural and urban areas and were frank in their statements; their frankness was most helpful to the student in his attempt to orient himself at this time in his career to the possibilities of the future. The gratitude of the Association goes to Dr. Murray Fisher, Gravenhurst; Dr. Sally Sarles,

(Continued on page 556)



Blood pressure in obese hypertensives frequently drops with weight loss[1]

And when an appetite-curbing agent is necessary to help bring about weight loss in obese hypertensives, many physicians prefer 'Dexedrine' because it has little or no pressor effect in the usual dosages.[2]

Dexedrine*

tablets and
Spansule sustained release capsules*

1. Ferguson, H.E.: Virginia M. Monthly 76:222
2. Roberts, E.: Am. Pract. & Dig. Treat. 5:608

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(Continued from page 554)

Wellington; Dr. Allan Pengelly, Willowdale; Dr. John Oswald of Toronto and Dr. James Garriock, Woodbridge. The chairman and moderator was Dr. Fred B. Fallis, Toronto.

It was felt that after one or two years of a good general internship, a young doctor would be well advised to find a situation in which he would have a sufficient volume of stimulating problems to face in order to build up his experience. This could be done by an assistantship during which, if associated with a well managed and busy practice, he would be introduced to the technique of practice and to the problems of general practice, which are very different from those a student sees in a teaching hospital. On the other hand, if he settles in a busy community he will have the opportunity of building up his own practice and applying in his own way the knowledge which he has learned, thereby expressing more completely his own potential talents.

One very important statement to emerge from the discussion was that the general practitioner would always be the hub of the wheel in the practice of medicine.

It was shown that the influence of the College of General Practice in stimulating the members of the profession to increase continuously their knowledge of the advancing science and art of medicine is of great value. Medicine has always been a profession in which the members were required to study continuously. The more this is done, the better will be the service rendered to society.

The economic problems of practice were discussed. The young doctor was urged to begin modestly with what he really needed and gradually add to his facilities as time revealed his needs. The pros and cons of an office in the home versus a separate office aroused some interest. In this economic field, considerable attention was paid to financial records, clinical records, industrial medicine and insurance examinations.

An interesting subject was the place of women doctors in general practice. Their value and limitations were pointed out, and the view was expressed that they could have a special relationship to obstetrics, gynæcology and pædiatrics. The question whether women doctors could marry, have families and continue to practice was answered in the affirmative by members of the panel with considerable experience.

The panel considered that the practice of medicine was not an easy life, that dedication to the calling was essential, that long hours and night work could not be avoided at times, but that in spite of all these things, it was a very satisfying life.

It was important, in the opinion of this panel, to have available a good hospital where the practitioner would obtain good radiological and laboratory facilities, a well qualified surgeon and good consultants in the various special fields. These facilities have improved and are still improving. With this fact before him, the young doctor would find that his community value would grow and his acceptance and reward would be indeed satisfying.

In rural Ontario a doctor could be the friend as well as the medical adviser of the patient and his family. It was noted that he could deal with minor surgery, such as fractures, tonsils and adenoids; that in the obstetrical field he would conduct most routine work and would have available senior and well trained consultants in these fields, so that his patients would have the advantage of the best possible medical care available in the community. In this way his own skill and experience would increase and his service to the community would grow as the years unfolded. This panel expressed the view that gradually general practitioners would cease to do major surgery.

The meeting was closed by a brief review by Dr. J. D. Armstrong, President of the Medical Alumni Association. His remarks were much to the point. He said that if a doctor was worrying too much about money he ought to be in business. Each one should ask himself: "How well would I do in medicine?" If he did not think he would do well, he should do something else. Any doctor, whether specialist or general practitioner, required the very close co-operation of all fields in order that the public interest would be well served.

ERNEST J. CLIFFORD

QUEBEC

Preparations for the annual meeting of the Quebec Division of the C.M.A. are well under way. It will be held in the same locality as last year, namely, the Chantecler Hotel at Ste. Adèle-en-Haut, on May 1, 2 and 3. Not only are members of the Quebec Division invited, but also any other C.M.A. member from adjacent divisions or any physician interested in the scientific program is welcome to attend. A wide range of medical and surgical topics will be covered, which should be of interest not only to practitioners, but also to a number of specialists.

Dr. C. W. Fullerton will talk about "The Use of Nitrogen Mustard in Treatment of Pleural and Peritoneal Effusions"; Dr. H. E. Lehmann, recent winner of the Albert and Mary Lasker Award, will speak on "Tranquillizers and Other Psychotropic Drugs in Clinical Practice". "Perinatal Mortality and How to Reduce it by Adequate Resuscitation" will be covered by Dr. J. R. James of New York. Dr. Allan Gold will bring the benefit of his experience in dealing with "Oral Hypoglycæmic Agents". "Recent Advances in Toxicology and Poison Centres" will be discussed by Dr. E. H. Bensley. On the surgical side, Dr. David Murphy will address the audience on "Surgical Emergencies in the Newborn", followed by "Timing of Pædiatric Surgery" by Dr. H. Owen. Dr. Jean Sirois will speak about "Meningeal Hæmorrhage and the Evaluation of Treatment in 75 Patients". Dr. C. E. Welch of the Massachusetts General Hospital (Boston) will present "The Surgical Aspects of Peptic Ulcer", and "The Physiological and Medical Aspects" will be covered by Dr. W. I. Card. Two medical symposia, one on cardiac disease and the other on coronary disease, will take place at lunch time. These will cover diet and hypertension (Dr. Jacques Genest), hypotensive drugs (Dr. B. A. Levitan), diagnosis and therapy (Dr. P. David), and rehabilitation (Dr. H. Segall). Traumatic surgery of the hand and surgical treatment of burns will be the topics discussed at two surgical symposia also given at lunch time. These will deal with soft tissue injuries of the hand (Dr. F. M. Woolhouse), open and closed skeletal injury of the hand (Dr. Y. Prévost), supportive therapy of the burned patient (Dr. H. J. Scott), and early and late treatment of burns (Dr. M. Entin).

(Continued on page 558)

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Round-table discussions on hæmatology and on biliary tract disease should prove most informative. Scientific motion pictures will be shown every morning between breakfast and the opening of the daily scientific session. The guest speaker at the annual banquet will be Dr. H. A. Bowes, who will address the assembly on "The Psychopathology of the Hi-Fi Addict".

As can be seen, these will be three days full of unusual interest for any practising physician, and it is hoped that there will be a full attendance.

NOVA SCOTIA

The Executive Committee of the Nova Scotia Division, Canadian Medical Association, has announced a revision in the doctors' fees for the province of Nova Scotia. This is the first revision of fees in the past five years. This revision calls for the continuance of charges in some forms of treatment at existing levels and a few reductions in rates, but most of the fees have been increased.

Office calls for the general practitioner will be a straight three dollars per office visit in place of the original three dollars for the first one and two for each subsequent call. Home calls are to be a straight four dollars for all visits. Medical calls by telephone, the charge for which was seldom levied by doctors in the past, will be increased from one to two dollars. Night calls after 6:00 p.m. have been increased.

One hears very little comment regarding the increase of fees. Maritime Medical Care have not yet adopted this new schedule and will not do so until July 1, 1958. They have asked for this six months' breathing space so that they may further study the increase and determine whether or not they will be able to meet this added financial burden. At the present time it would appear that Maritime Medical Care will not be able to pay the new schedule unless the subscribers' rates are increased. There is a feeling in some quarters that we have been too modest in drawing up the new schedule of fees. This thought has been expressed not only by members of the profession themselves but also by the laity.

The Hospital Sisters of St. Joseph have indicated their readiness to go to Yarmouth and erect a new general hospital. Realization of the project, it is said, rests at the moment with the Provincial Government and its final decision regarding certain details of the proposed hospital insurance plan.

For the past four years the Sisters have been preparing the staff of supervisors chosen to operate their hospital at Yarmouth, which would include a school of nursing. The plans call for a 100-bed hospital, 80% of which would be used for active treatment and 20% for chronic treatment. The main building would have five storeys, incorporating accommodation for 12 Sisters and 12 supervisors. The total staff would number about 175. The architect's plans for this hospital are for one of modernistic design. It would be fireproof and incorporate the latest in hospital devices, and would have a number of offices for doctors and other technicians on the staff. There would be three operating rooms. The site for the new hospital is on a hill on Hibernia Street in Yarmouth North, with an attractive view overlooking Yarmouth Harbour and the Bay of Fundy.

WALTER K. HOUSE

BOOK REVIEWS

FOR FUTURE DOCTORS. Alan Gregg. 165 pp. The University of Chicago Press; The University of Toronto Press, 1957. $3.50.

There are a few—and only a few—medical men whose collected addresses are well worth reading. Wilfred Trotter, the London surgeon, was one, and Alan Gregg—who admired and quoted Trotter—is another of this select company. Alan Gregg was a physician with strongly individual ideas and a wide range of interests both within and outside medicine, a super-generalist in an age of specialism and (as director of medical sciences for 30 years) one of the mainstays of the Rockefeller Foundation. His unrivalled knowledge of medical schools made him an obvious target for schools seeking a speaker at various public functions, and the present volume contains a posthumous collection of such addresses together with some essays.

In spite of the title, this book can be read with profit by physicians of any age; it is indeed probable that only those with some experience of medicine will properly appreciate Dr. Gregg's awful warnings, such as the sad tale of Dr. Preserved Jones, the pathetic super-specialist. The topics covered include responsibility, the power of shared experience (with dissection as an initiating rite binding medical students together!), creativeness in medicine, speaking, writing and reading in medicine, provincialism, the value of a sense of incompleteness, and the importance of travel.

Like Hamlet, the essays are full of quotations. Thus, "the charm of being an individual is that you don't follow statistics; you make them". Or, "there are at least two fields, endocrinology and serology, where we have not yet found the right type of symbols for the kind of thinking that is needed". And the subtle remark, "provincialism increases in geometrical progression when it is both medical, metropolitan and American".

Those who knew Gregg won't need any recommendation of this volume; those who did not, can be assured that he grows on the reader and really has something to say.

THE EVOLUTION OF MEDICAL EDUCATION IN THE NINETEENTH CENTURY. Charles Newman, Dean of the Postgraduate Medical School of London. 340 pp. Oxford University Press, London and Toronto, 1957. $4.50.

Anyone who supposes medical education to be a dull subject should read Dr. Newman's book, and revise his ideas. The narrative covers the vital years in British medical education; it shows how the medical profession gradually set its house in order as the tempo of medical discovery quickened. In 1800, at the beginning of the story, the profession was sharply divided into three "orders"—the physicians, the surgeons and the apothecaries. The apothecaries were the first to arrange a curriculum and examinations, but the rise of the general practitioner early in the century blurred the demarcations between the orders and eventually brought a measure of uniformity into the medical curriculum, which by the middle of the century was designed to produce the "safe general practitioner". During the second half of the century, the dominant

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theme is the rise of laboratory medicine, and its impact on British medicine.

Although Dr. Newman documents his study thoroughly, and omits no details of the extremely complicated story, he writes in an urbane and witty style and embellishes the tale with many gems of wisdom from his wide experience (he is dean of the Postgraduate Medical School in London). This is medical writing at its best, and it is not surprising that the book has been favourably reviewed in journals outside medicine. It is undoubtedly required reading for any medical educator, and a most interesting experience for other physicians as well.

ADVENTURES IN MEDICAL EDUCATION: A Personal Narrative of the Great Advance of American Medicine. G. Canby Robinson, Emeritus Lecturer, School of Medicine, Johns Hopkins University, Baltimore, Md. 338 pp. Illust. Published for The Commonwealth Fund by Harvard University Press, Cambridge, Mass.; S. J. Reginald Saunders and Company Limited, Toronto, 1958. $6.50.

Dr. Canby Robinson, who now holds an emeritus position at Johns Hopkins University, is one of that fortunate band of men to be educated at this august institution in its golden age. He began his medical career in the best possible way by sitting at the feet of the great Osler, Welch, Halsted and Kelly. The effect was lasting, and Dr. Robinson spent the next few decades of his life in helping to build the vast structure of modern American medical education. This book is the story of his life, beginning with his Johns Hopkins days, continuing through his postgraduate training at the Pennsylvania Hospital and in Europe, and describing his work in the early days of the Rockefeller Institute and later in the organization of the Washington University School of Medicine and Vanderbilt University School of Medicine. From there he went to the New York Hospital–Cornell Medical College organization, but through no fault of his own ran into difficulties there, which culminated in his retirement from the post of director and what seems to have been the only disappointing phase of his life. However, Dr. Robinson was too good a man to stay down for long, and he was soon off to China where he served as a teacher at the Peiping Union Medical College. On his return, he came back to Johns Hopkins, there to put into practice his ideas about the social problems of patients. Dr. Robinson, aided by research grants, conducted a pioneer study on the relation of emotional strain and social factors to ill-health. World War II came along and Dr. Robinson found himself asked to organize the Red Cross Blood Donor Service. In the post-war era he became executive secretary of the Maryland Tuberculosis Association.

Dr. Robinson begins and ends his book with chapters reviewing the progress of medical education in the U.S.A. before the Johns Hopkins epoch and afterwards. This is the plain and unvarnished tale of a most useful life in medical education, told with becoming modesty and yet revealing that highly developed sense of social responsibility without which no physician is fully complete.

SANITARY SCIENCE NOTES. A Handbook for Students. H. Hill and E. Dodsworth. 135 pp. 3rd ed. H. K. Lewis & Co. Ltd., London, England, 1957. 10s. 6d.

This is a condensation of information required by sanitary science students, health workers, and others as a ready reference to any point in doubt. It is not intended to take the place of a textbook but deals in sufficient detail with such subjects as building construction, disinfectants, disinfection, drainage and sewerage, heating, household pests, sewage disposal, smoke abatement, and water supplies. This is a most useful pocket reference, authoritative and modern.

CARDIO-CHARTING. Universal Method of Recording Heart Auscultation. Arthur Briskier, Senior Clinical Assistant Physician and Cardiologist, Mount Sinai Hospital, New York City. 58 pp. Illust. Brett-Macmillan Ltd., Toronto, 1957. $6.00.

The author presents a graphic method of recording heart sounds and murmurs in a descriptive (not a phonocardiographic) way. Most descriptions of auscultatory findings are too brief or casual to be of value to other observers or on a comparative basis. This is an attempt to systematize in a detailed way all of the characteristics of cardiac auscultatory phenomena by a kind of shorthand which, if universally adopted, would indeed improve the recording of the cardiac examination. Unfortunately considerable time and care would be needed to master the method and it seems unlikely to achieve wide popularity. An ample text is included. This volume will be of interest chiefly to the cardiologist.

MAY'S MANUAL OF DISEASES OF THE EYE. Revised and edited by Charles A. Perera, Associate Clinical Professor, College of Physicians and Surgeons, Columbia University, New York. 518 pp. Illust. 22nd ed. The Williams & Wilkins Company, Baltimore; Burns & MacEachern, Toronto, 1957. $6.00.

For nearly sixty years May's *Diseases of the Eye* has been a best seller in ophthalmology. This twenty-second edition is a revision of the one prepared for American readers (a British edition has also been running for fifty years). The principle has been maintained of keeping the book short and succinct, as a textbook for medical student and general practitioner. Dr. Perera has brought the text up to date, and has retained the many helpful coloured pictures of eye conditions.

THE BASES OF TREATMENT. Neuton S. Stern and Thomas N. Stern, University of Tennessee, College of Medicine, Memphis, Tennessee. 176 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. $5.25.

This is an excellent book for the mature and thoughtful medical student, and should stimulate all students of medicine, undergraduate or graduate. It would form a good basis for a lecture course in therapeutics or medicine, either introductory or as a final summing-up.

The authors obviously have sound commonsense and have had a wide clinical experience. They outline the basic principles of treatment—the relationship of doctor and patient, the responsibility of the doctor to his patient, the necessity for making the patient comfortable while employing the many modern aids to diagnosis, and the harmful effects of drugs as well as their benefits. This text describes general principles, not specific therapeutic measures except as examples, and for this reason may not appeal to many medical students and practitioners. However, application of these principles is the reason for the success of most practitioners. For students it should be required reading in the final year.

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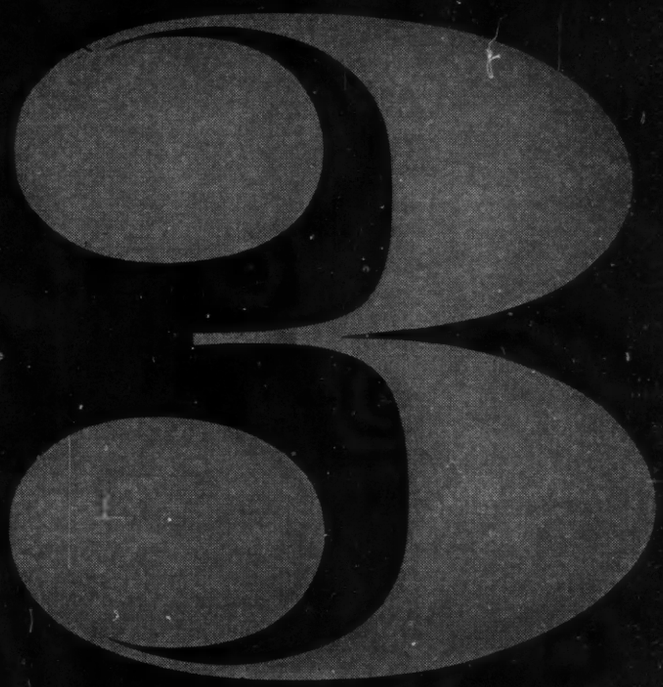

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PREVENTION OF RHEUMATIC FEVER. Second Report of the Expert Committee on Rheumatic Diseases. WHO Technical Report Series No. 126. 27 pp. World Health Organization, Palais des Nations, Geneva, 1957. $.30.

This report opens by pointing out the importance of rheumatic fever in various parts of the world. A table listing the deaths from cardiovascular diseases in persons aged less than 35 years shows a breakdown in which the deaths recorded as due to rheumatic fever or chronic rheumatic heart disease are expressed as a percentage of all deaths from cardiovascular diseases. The breakdown thus obtained shows that these figures range from 5.1 for the Federal Republic of Germany to 52.1 for Israel. If morbidity is considered, surveys show us that between 1 and 2% of school children in the United States of America and Italy have been found to have heart lesions resulting from rheumatic fever. Similar figures are reported from several other countries. The relationship of streptococcal infection to rheumatic fever is briefly reviewed and measures for the control of streptococcal infections are then outlined.

The use of sulfonamides in a dosage of 0.5 g. per day for children and 1.0 g. per day for adults is now well established. The low cost of this therapy should be balanced against the risk of skin eruption and such blood dyscrasias as granulocytopenia which may result from its prolonged use. Benzylpenicillin (G) given orally twice a day at the rate of 100,000 to 200,000 units, or benzathine penicillin intramuscularly at the rate of 1,200,000 units once a month, have both proved more effective than sulfonamides. However, penicillin is not devoid of toxic manifestations and its cost and inconvenience of administration are more important than those of sulfonamides. Although the prolonged administration of such drugs could give rise to resistance of other microorganisms to them, it has been shown that the resistance developed by *Streptococcus viridans* does not prove much of a problem; on the other hand, that of enterococci (group D streptococcus) may give rise to penicillin-resistant subacute bacterial endocarditis. The tetracyclines can be substituted for sulfonamides or penicillin in the prophylactic treatment of rheumatic fever. Although they are considered less effective than both, they may become useful in the treatment of patients who have developed intolerance to other drugs. Superimposed streptococcal infections in rheumatic patients are best treated by large therapeutic doses of penicillin. It must be remembered that treatment should exceed by several days the duration of symptoms. In the control of the spread of streptococcal infections, the conventional measures such as isolation of carriers, or proper aeration of the premises, should not be neglected.

Conditions in which the streptococcus plays a part should be recognized early and treated vigorously. Among these are scarlet fever, some forms of pharyngitis with or without tonsillitis, complications of upper respiratory disease and syndromes which are frequently linked with the streptococcus such as middle ear and mastoid infections, and erysipelas. Throat cultures obtained with a satisfactory technique should be secured whenever possible.

The Jones criteria (modified) for guidance in diagnosis of rheumatic fever are offered as an annex.

This booklet gives a useful synopsis of our present knowledge of rheumatic fever and its therapy, except for the fact that, like most textbooks dealing with therapy, it is already outdated by the time of publication. In the present instance, no mention is made of phenoxymethyl penicillin, which certainly has a place in the prevention of this disease. Apart from this minor shortcoming, this booklet forms an authoritative and concise source of reference on the matter.

THE CAUSES AND PREVENTION OF ACQUIRED MYOPIA. Tikasi Sato. 236 pp. Kanehara Shuppan Co., Limited, 21 Yushima Kiridoshisaka, Bunkyoku, Tokyo, Japan, 1957.

Sato advocates the theory that myopia is due to increased tonus of the ciliary muscle with secondary increase in the refractive power of the lens. He finds that in simple myopia the curvature of the cornea is not remarkable, the axial length of the eyeball is not abnormal, but the refractive power of the lens is increased.

Prevention and cure of myopia may be undertaken by the prolonged ocular instillation of atropine, decrease in the amount of near work, and improvement in the Japanese national characters.

It is probable that in recent years more thought has been given to the problem of myopia, its cause, prevention and cure, in Japan than in any other country. This book summarizes many of the Japanese experiments and thoughts on this matter, and as such is an excellent source of material. There is an extensive bibliography.

SURGERY IN WORLD WAR II. GENERAL SURGERY, Vol. II. Edited by Colonel John Boyd Coates, Jr. 417 pp. Illust. Office of the Surgeon General, Department of the Army, Washington, D.C., 1956.

Too often in the past, official government documentation of medical experiences in war-time has consisted essentially of the collections of huge masses of statistics, difficult to read and even harder to comprehend. This volume, published as part of a series by the Medical Department of the United States Army, definitely escapes from the pattern noted above, and is a real contribution to the surgical literature.

It is chiefly based on a total of 3154 abdominal injuries, all the result of the violence of war. That the analysis could be of such high quality is in large part due to the fact that, despite the pressures of the emergency situation, it was planned in advance.

The book is the combined work of a collection of experts, most of whom were already widely experienced authorities in practice. It is divided into three parts. Part I deals with resuscitation, control of pain and anæsthesia, Part II with abdominal injuries and the initial surgery of abdominal wounds. Part III is devoted entirely to the subject of colostomy. This procedure was widely employed in World War II and was responsible for saving many lives. It illustrates particularly well the efforts to evaluate the practices that were being used—in order to determine most accurately and quickly which methods were meeting the most success in the situations that were being encountered.

The writing is clear and interesting—and surprisingly easy to read. The evaluations of subjects such as antibacterial therapy and wound dehiscences which are of everyday interest in surgical practice, are particularly good. The results and the lessons of a tremendous mass of material are concisely presented in a few short chapters.

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CONNAUGHT

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It has been shown by O. Smithies (Biochemical Journal *61*, 629, 1955) that the use of carefully prepared gels of hydrolysed starch in zone electrophoresis of protein mixtures leads to a resolution of the components superior to that obtained by classical methods of electrophoresis. The starch-gel method is particularly suitable for the study of serum proteins. Successful use of the technique requires selection of suitable starch and hydrolysis under carefully controlled conditions. Not all samples of starch are satisfactory for the procedure.

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Every physician should find this book interesting. Few abdominal surgeons should overlook the opportunity to learn from it.

ORAL DIAGNOSIS AND TREATMENT (ORAL MEDICINE). Edited by Samuel Charles Miller, Department of Periodontia and Oral Medicine, New York University College of Dentistry. 977 pp. Illust. 3rd ed. McGraw-Hill Company of Canada Limited, Toronto, 1957. $16.80.

The third edition of this well-known book has been considerably revised from cover to cover. New chapters include all phases of dental technical treatment planning as well as what might be referred to as oral medicine. This book has something of value in a practical sense for both the dental and the medical practitioner. This reviewer has found it to be the best of its kind.

CONGENITAL ANOMALIES OF THE VISCERA. Their Embryological Basis. J. L. Bremer, Harvard University. 202 pp. Illust. Harvard University Press, Cambridge, Mass.; S. J. Reginald Saunders and Company Limited, Toronto, 1957. $5.50.

Professor Bremer gives a clear and concise description of the congenital anomalies of the viscera, discussing the etiological factors involved in their production. The book represents the results of 50 years of embryological research and bridges the gap between the basic embryological course given for the medical students and the needs of the young doctor wishing to specialize.

The chapters devoted to the heart and great vessels, covering nearly one-third of the text, contain much of Professor Bremer's original work and should be especially noted by those working in the field of cardiovascular surgery.

This book will be especially valuable to those proceeding to certification or fellowship in surgery who will find the simplified line drawings and illustrations easy to follow.

PRINCIPLES AND TECHNICS OF REHABILITATION NURSING. Edited by Deborah MacLurg Jensen. 345 pp. Illust. The C. V. Mosby Company, St. Louis, Mo., 1957. $5.50.

This book presents the need for and the philosophy underlying rehabilitation with greater clarity and understanding than is usual with those who write on this subject. It creates the impression that this group of nurses have grasped the significant details of the management of the sick and the disabled, and would be competent to deal with human problems. The misapprehensions existing amongst both lay and professional people about the nature and content of rehabilitation are noted, as well as the conflicts that sometimes arise between various professional groups.

When dealing with specific disabilities, the importance of the activities of daily living is emphasized and the details of teaching of self-care are excellently portrayed. This includes the description of self-help devices and the importance of the hydraulic lift in dealing with helpless patients. The nurse's principal responsibilities on behalf of those suffering from the common chronic diseases are in general well handled, but the section on hemiplegia would have been improved had mention been made of the importance of the nursing of the comatose patient and of bladder, bowel and respiratory care. Similarly, when dealing with paraplegics, the authors do not reveal an understanding of the differences between an atonic and a hypertonic bladder, which are important concepts in relationship to bladder training. The details of bladder and bowel training are not specified in such a way that the uninitiated could learn the techniques from this book. It is rather curious that at the end of the chapter entitled "Hemiplegia, Paraplegia and Quadriplegia", a case of poliomyelitis is described to illustrate these conditions. Likewise, no apparent differentiation between partial and complete cord lesions is made, and pain as a factor in paraplegia is not considered.

A nice distinction is made in dealing with the aged—those without disability due to age and those with disability resulting from disease or injury—and again the understanding of the psychological and emotional problems is obviously good. The section on child care shows excellent general understanding of the problems, physical, psychological and social. Psychiatric problems in adults are dealt with fairly well, and the chapter on speech is most informative and should be read widely.

There is considerable repetition in the book, which would perhaps be more valuable if it were more concise, but this is inevitable when there are several authors. In general, the book is well worth reading, not only by nurses but all others interested in problems of rehabilitation.

PIONEER SURGEONS OF THE WOMAN'S HOSPITAL. James Pratt Marr. 148 pp. Illust. F. A. Davis Company, Philadelphia, Pa.; The Ryerson Press, Toronto, 1957. $6.00.

The Woman's Hospital in New York City is just over one hundred years old, and Dr. Marr tells the story of its early years in terms of the lives of the first four members of the surgical staff. The earliest to appear on the scene is the great American gynæcologist, James Marion Sims, who was the main driving force behind the foundation of the hospital. The other three members of the staff whose biographies appear here are Thomas Addis Emmet, Edmund R. Peaselee and Theodore Gaillard Thomas. Dr. Marr notes their different backgrounds. Sims was the son of an uneducated tavern keeper, while Emmet grew up in an atmosphere of poverty but culture; Peaselee lost his father at the age of seven and was therefore brought up in straitened circumstances, while Thomas was the son of a scholarly clergyman. It is curious to note that Sims even during the first ten years after his entry into the medical profession regarded his calling as only a means of livelihood and had no sense of vocation, while Peaselee was early fired with the ambition to be a doctor. Despite this difference, they both became men dedicated to the practice of their specialty.

In sketching the lives of these four great men, Dr. Marr contributes a brief survey of the formative years of American gynæcology. His book will therefore be of particular interest to the students of the history of that specialty.

GULLAN'S THEORY AND PRACTICE OF NURSING, 7th ed. Revised by Marion E. Gould. 243 pp. Illust. H. K. Lewis & Co., Ltd., London, 1956. 18s.

In the preface of this book the reviser states, "Again I would like to stress that the aim has been so to

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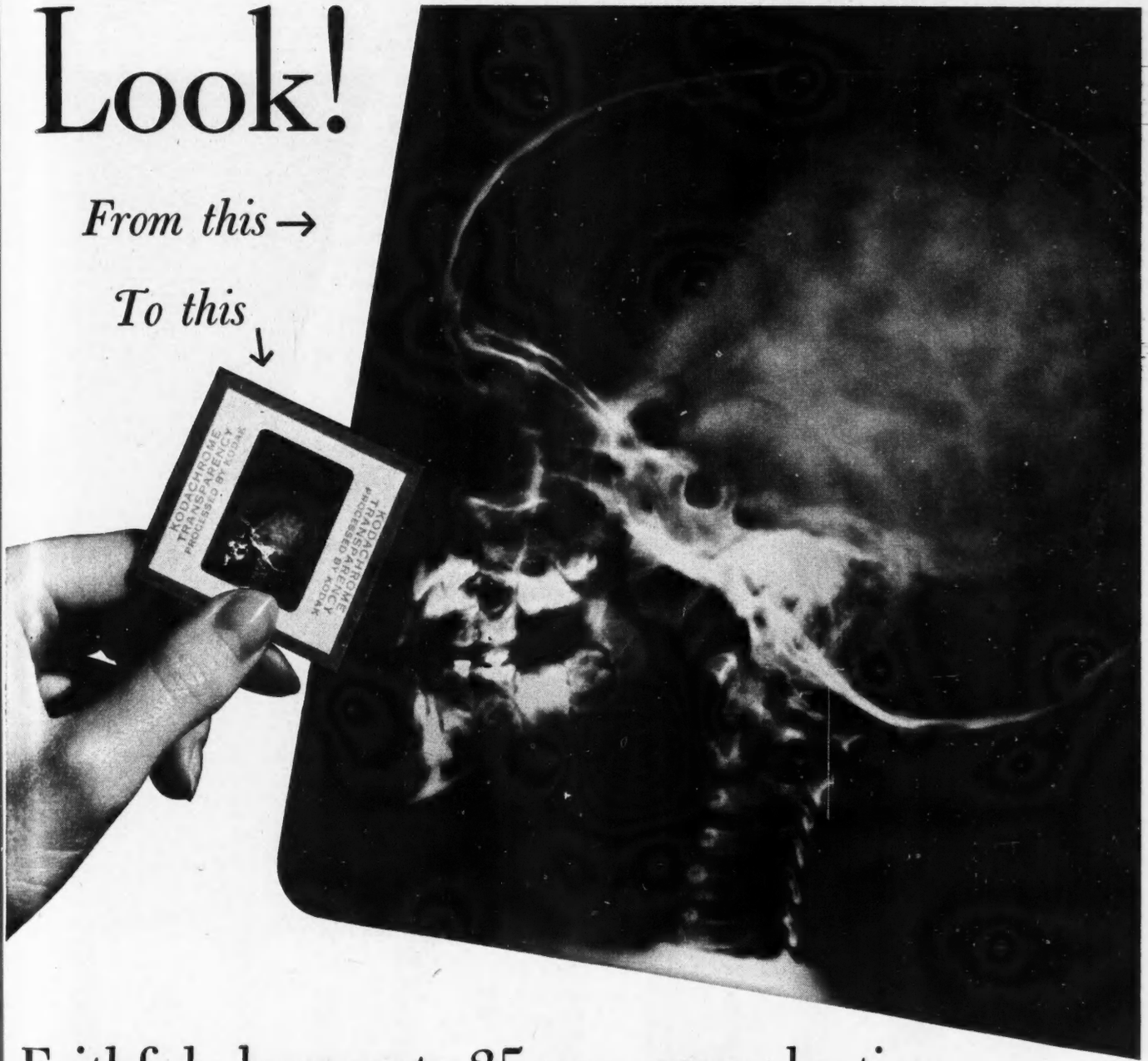

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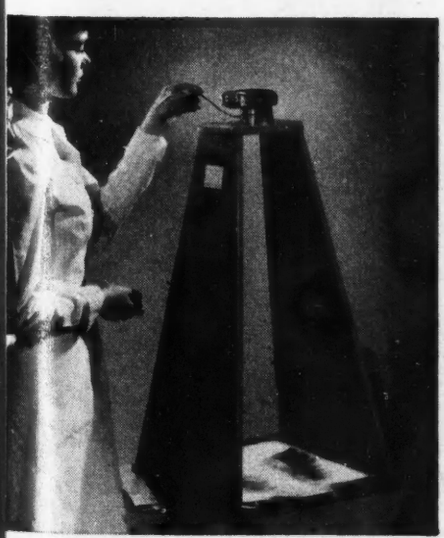

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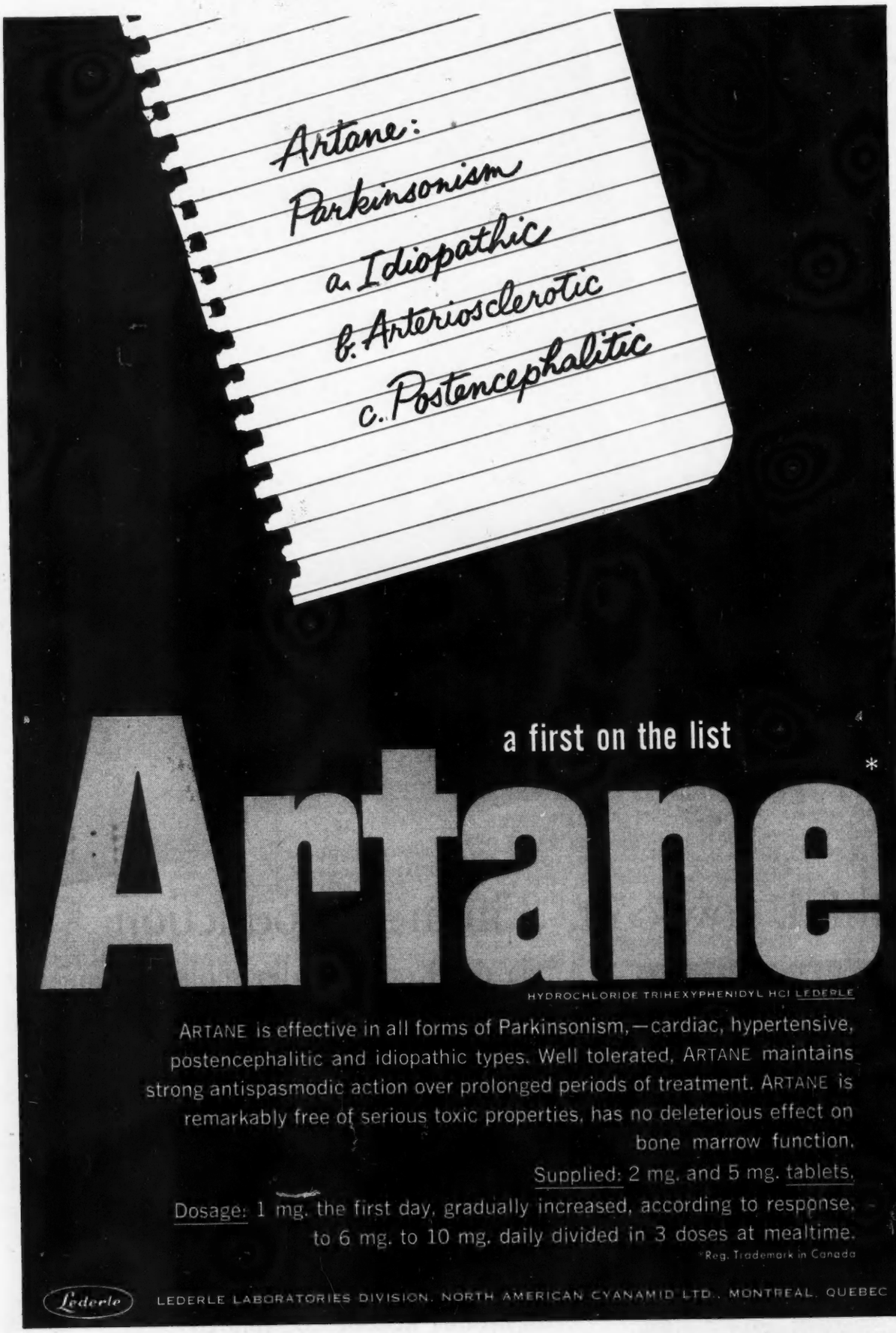

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(Continued from page 564)

present nursing methods with their underlying principles and purposes so they shall not degenerate into mechanical performance but rather enable the nurse to be creative and make intelligent adjustment under varying conditions." How can "intelligent adjustments" be made under "varying conditions" without some knowledge of the individual and social behaviour such as would be obtained from the social sciences? Something new to the reviewer in a nursing textbook is the inclusion of anatomy, chemistry, microbiology, pharmacology and nutrition in segregated sections. This is done at the expense of the human aspect and vital material such as interpersonal relationships, spiritual needs of the patient, rehabilitation, and care of the dying patient.

In a book for general use in schools of nursing, the reviewer feels that it would be best to avoid listing requisite articles and making such statements as "The soiled dressings . . . and placed in the receiver on the lower shelf". It would be of more value to have stress on basic principles which might be applied to any situation.

As the scope of this book seems to be restricted to the technical side of nursing, explanations of procedures and techniques are detailed, and as such, of value in a reference text for a busy instructor. However, it does not help us in our efforts to place emphasis on the human aspect of nursing.

DEAFNESS, MUTISM AND MENTAL DEFICIENCY IN CHILDREN. Louis Minski, Consultant Psychiatrist, Royal National Throat, Nose and Ear Hospital and St. George's Hospital, London, England. 82 pp. Illust. William Heinemann Medical Books Ltd., London; British Book Service (Canada) Ltd., Toronto, 1957. $2.20.

This little book, written by a psychiatrist, contains a preface, index and eight chapters packed into its 82 pages. These are fairly brief with the exception of one on psychological testing. This chapter, comprising fully a third of the total book, is given up almost entirely to a description of the Merrill-Palmer Pre-school Intelligence Scale and the Drever-Collins Performance Tests of Intelligence. In comparison the chapters on audiometry and electrophysiological methods of assessment each receive not more than four and a half pages. According to the wrapper, the book stresses the difference between children who are really mental defectives, "children for whom nothing can be done", and children who are only deaf or who have no speech and yet are not deaf. It is claimed that it teaches how to distinguish between the two groups. In this respect it is doubtful whether it succeeds as well, for example, as Myklebust's more comprehensive work on the same subject. The real merit of this book would appear to lie more in the space it devotes to the setting up of residential diagnostic units for such children. The author describes two such units attached to his hospital in England, each catering for eight children. One is self-contained in a separate block of the hospital; the other is situated some distance away in a private

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April 1, 1958, vol. 78

house and destined more specifically for children whose diagnosis is further complicated by emotional difficulties. Residence varies from a minimum of three weeks in most cases up to eight months or longer. Once diagnosed, children are placed in appropriate schools or else recommendations are made for the most suitable placement. The system described has now been in operation for three and a half years and seems to be filling a definite need in the most admirable fashion.

THE MANAGEMENT OF ABDOMINAL OPERATIONS, Vol. II. Edited by Rodney Maingot, Surgeon to the Royal Free Hospital, London, and Southend General Hospital, Essex, England. 1405 pp. Illust. 2nd ed. The Macmillan Company, New York; Brett-Macmillan Ltd., Toronto, 1957. $32.00 (Vols. I and II).

The second edition of this well-known surgical text is a compilation of articles contributed by surgeons noted in their several fields. It covers the subject regionally, from infantile pyloric stenosis to surgical lesions of the colon, rectum and anus. Short chapters are appended on the management of abdominal injuries in warfare and civil life, and the management of abdominal operations, with a few pages on normal values in clinical biochemistry. The book is generously and excellently illustrated.

The preface states that this text has been prepared for postgraduate and fellowship students. Some parts could be expanded even at the risk of a lengthened book. Under surgery of the spleen, none of the surgically important parasitic lesions are mentioned, under hernia early fascial repairs such as McArthur's are omitted, while the care of hæmorrhoids is treated in an elementary style, and non-specific ulcerative colitis is too briefly dealt with for such an important and troublesome lesion.

THANNHAUSERS LEHRBUCH DES STOFFWECHSELS UND DER STOFFWECHSELKRANKHEITEN (Thannhauser's Textbook of Metabolism and Metabolic Diseases). Edited by Nepomuk Zöllner, Munich. 1040 pp. Illust. 2nd ed. Georg Thieme Company, Stuttgart, W. Germany; Intercontinental Medical Book Corporation, New York, 1957. $30.25.

This book is the second edition of Thannhauser's famous and widely read *Textbook of Metabolism*, first published in 1929. The new edition is a completely rewritten version of the first, prepared by a panel of 14 authors chosen from France, Germany, Sweden, and the United States, under the able direction of Dr. Zöllner. Many of the authors were students, co-workers or friends of Thannhauser, including the editor himself. An earnest effort was made to correlate and integrate the material presented by the different authors, in order to preserve a great asset of the first edition, the presentation of a unified concept of metabolism. Considering the number of authors, this is an almost insurmountable task and was more easily achieved by the first edition, written single-handedly by Thannhauser.

An interesting and concise chapter deals with the history of metabolic research and introduces the first section of the book on general metabolism. This is followed by a section on intermediary metabolism dealing mainly with the problems of biological oxidations, and the regulatory function of the thyroid gland. In further sections, the problems of carbohydrate, lipid, protein, water and electrolyte metabolism are dealt with. Special chapters are devoted to the metabolism and function of mucopolysaccharides, nucleic acids, bile pigments, bile acids, iron, and the mechanism of blood clotting.

It is difficult to assess the value of such a comprehensive work covering a very wide field. For many a reader on this continent, hampered by difficulty with the language, of greatest value may be the lists of large numbers of references to review articles and original publications, covering both the American and European literatures.

MANUAL OF RADIATION THERAPY. K. Wilhelm Stenstrom. Collected by John B. Coleman and revised by Paul C. Olfelt and Frances Conklin. 94 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1957. $5.00.

The manual represents a brief compilation of the methods of radiotherapy as practised in the University of Minnesota Hospitals. A sketchy review of pertinent radiation physics, chemistry, and biology introduces the manual and this is followed by an outline of the dosages and fields of irradiation used in the treatment of malignant and non-malignant diseases as arranged by systems. The lymphomata and soft tissue sarcomata are considered separately.

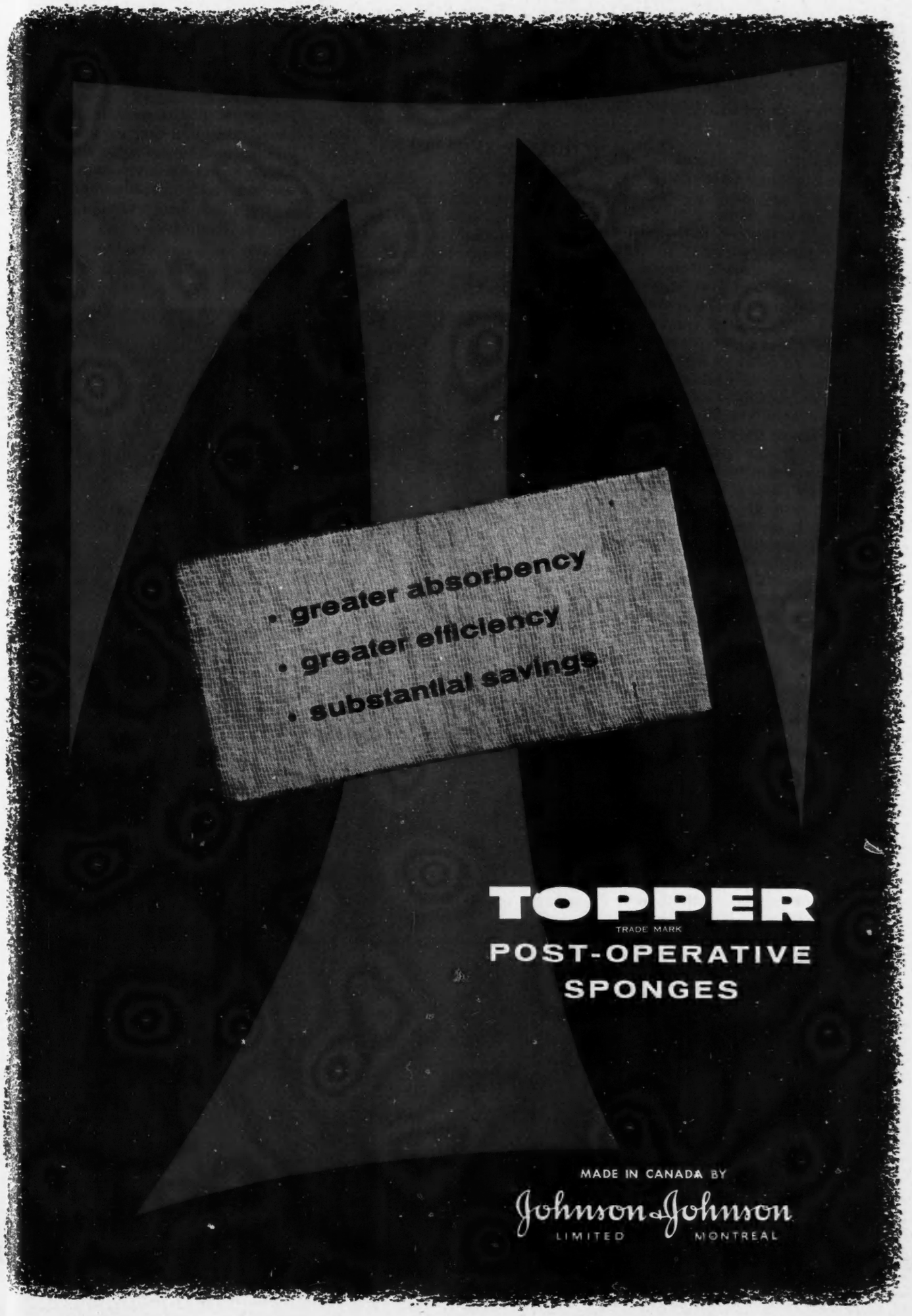
The choice as to supervoltage therapy with cobalt or regular 250 kV radiation is indicated, and dosages are quoted both as air and tumour doses. The fractionation of the total dosage is given in each instance. The manual is a practical guide.

FELLOWSHIP IN MEDICAL RESEARCH

THE FITZGERALD MEMORIAL FELLOWSHIP
School of Hygiene, University of Toronto

Applications are invited from physicians for this Fellowship vacant July 1st, 1958, at an annual stipend of up to $5,000. Preference will be given to a person prepared to join a team investigating virus infections in the field and laboratory.

For further information write to Dr. A. J. Rhodes, Director, School of Hygiene, University of Toronto, Toronto 5, Canada.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MEDICAL NEWS *in brief*

(Continued from page 535)

THE URINE BOTTLE AND BEDPAN AS RESERVOIRS OF INFECTION

Infection with *Pseudomonas pyocyanea* is one of the nuisances of genito-urinary surgery. McLeod of Edinburgh (*Lancet*, 1: 394, 1958) has investigated the ways in which *Ps. pyocyanea* infection may be carried and persist in wards. His observations suggest that the urine bottle and the bedpan are reservoirs of infection, and that nurses and orderlies required to empty and rinse these instruments in wards active in urological surgery will inevitably infect their hands repeatedly with *Ps. pyocyanea*. Hence they are a source of danger to any patient whose bladder and drainage or lavage apparatus they have to manipulate.

As protection against this danger, it is not enough to simply sterilize bottles and bedpans, for some commonly used antiseptics do not destroy this species. However, Hibitane 0.2% and carbolic acid 2% are both effective and should be used.

ALCOHOL AND EPILEPSY

In the February 1958 issue of the Foundation's bulletin, Smart from the Alcoholism Research Foundation, Toronto, discusses the relationship between alcohol and epilepsy. He brings evidence from the literature to show that chronic excessive consumption of alcohol can cause metabolic disturbances sufficient to induce seizures in drinkers not previously thought or known to be epileptic. Unfortunately, we are still unable to distinguish those cases in which an abnormal electroencephalographic pattern existed before excessive drinking began. An analysis of 1335 files of the Brookside Clinic of the Alcoholism Research Foundation for the years 1951-1954 brought to light at least two patients in whom epileptoid dysrhythmias without seizures had existed before their addiction to alcohol. It seemed that latent epilepsy had been made manifest by alcohol in these cases.

It would also seem likely that epileptics are more susceptible to alcoholism than non-epileptics, but the evidence is still obscure. There is therefore need for further research into both problems, i.e. whether alcoholism can cause epilepsy or whether epilepsy is a precipitating cause in alcoholism.

HOXSEY TREATMENT FOR CANCER

The report of a committee of faculty members of the University of British Columbia concerning the Hoxsey treatment for cancer is now available from the Queen's Printer of the Province of British Columbia. The report, which is signed by Dr. J. M. Mather, the head of the Department of Public Health, and his five colleagues including a lawyer, a librarian, a mathematician, a surgeon and a pathologist, is a fascinating study in human behaviour and deserves widespread reading and consideration. The findings are best summarized by quoting from the report.

"We, a committee of faculty members of the University of

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in the control of
hypercholesterolemia
and **atherosclerosis**

1. the dietetic level — unsaturated fatty acids (safflower oil) act to counterbalance ingested saturated fatty acids . . . which helps shift atherogenic beta-lipoproteins to the more normal alpha-lipoproteins . . . and reduce elevated cholesterol levels.*

2. the physiological level — lipotropic factors stabilize function of the liver . . . the site of metabolism of cholesterol, lipoproteins and other lipids.

British Columbia, convened to conduct an impartial review of the Hoxsey treatment for cancer, after personal investigation and a review of documentary material, conclude that the procedures and the medications known as the Hoxsey treatment for cancer are of no value in the treatment of internal cancer and that the external treatments used have no place in modern cancer therapy. We have found that the methods of diagnosis are inadequate, that the treatments used for internal cancer do not affect the progress of the disease, that no serious attempt is made to follow up treated cases in order to evaluate results, and that no significant research has been done.

"From the viewpoint of cancer control, we believe that the chief danger presented by the Hoxsey treatment is the delay that is occasioned to patients who might have a reasonable opportunity of being cured by the proven methods of surgery and radiation. The other menace of the Hoxsey treatment is the false hope it arouses in patients and the useless expenditure of large sums of money by many who can ill afford to do so."

This is not at all surprising, but what is surprising is the unshaken confidence of patients such as the one described in the following quotation:

"The first of these patients was a man of 70 with a growth on his lower lip. He had been attending the clinic for six months or more. It was stated that he had had a tumour the size of a pecan. When we saw him, he had a deep, sloughing ulcer, the result of repeated applications of an escharotic material. There was no confirmatory pathological evidence that this condition was cancerous. This type of cancer is readily treated with radiation or surgery with an excellent expectation of cure and with minimal discomfort, pain and disfigurement. He had had six months of painful, disagreeable therapy of an entirely inadequate type, but his confidence and that of his son were apparently unshaken. He obviously felt that his life had been saved by this treatment."

PREVENTION OF RECURRENCE AFTER RADICAL CANCER SURGERY

In Vienna, 64 patients who had undergone radical operations for cancer were treated with a nitrogen mustard derivative (Nitromin or Mitomen) prepared in Japan and Germany, in order to attempt to prevent recurrences. Courses of 50-75 mg. daily intravenously to a total of 700-800 mg. were given (2 or 3 courses at 6-8 week intervals), beginning a week after operation. Of the series, 46 patients had bronchial carcinoma and in 25 the operation had been performed at least six months previous to this report. A significant prolongation of survival time was obtained in these cases as compared with the expected survival in untreated cases. Although this can be regarded only as a preliminary report, the author stresses the apparent effectiveness of this chemical and its freedom from significant side-effects. — P. Wurnig: *Wien. klin. Wchnschr.*, 70: 63, 1958.

(Continued on page 54)

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from specially refined safflower seed oil. Provides approximately 294 mg. of linoleic acid.

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MEDICAL NEWS *in brief*

(Continued from page 53)

INDUSTRIAL HEALTH CONFERENCE

The 13th national Industrial Health Conference, sponsored by such organizations as the Industrial Medical Association and the American Industrial Hygiene Association, will take place in Atlantic City, New Jersey, April 19-25, 1958. A total of 134 papers will be presented on such subjects as radiation, mental health in industry, air pollution, noise, medical care under in-plant health services, industrial dentistry and industrial nursing. Information from Edward C. Holmblad, M.D., Managing Director, Industrial Medical Association, 28 East Jackson Boulevard, Chicago 4, Illinois.

—

TREATMENT OF PSYCHOTIC STATES WITH NEWER PHENOTHIAZINE COMPOUNDS EFFECTIVE IN SMALL DOSES

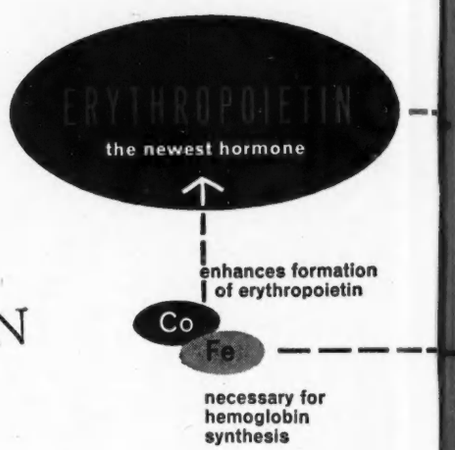
Four phenothiazine compounds related to chlorpromazine were investigated by Goldman (*Am. J. M. Sc.*, 235: 67, 1958) for effectiveness in treatment of psychotic states in significant numbers of patients: Compazine (prochlorperazine), 667 patients; Trilafon, 206 patients; Vesprin 176 patients, and Winthrop No. 13,645-5 in 94 patients. All of the patients were confined in a state mental hospital and were suffering from chronic psychoses. The chief differences between these compounds and the previously familiar phenothiazine derivatives such as chlorpromazine, promazine and mepazine were more intense pharmacologic and therapeutic activity and consequent smaller dosage level and much less frequent occurrence of side-effects and toxic complications. Particularly important was the absence of jaundice and, in the series thus far observed, absence of agranulocytosis. These drugs also caused little or no sedation, in contrast to chlorpromazine and reserpine, but have much greater beneficial effect on psychotic manifestations, such as delusions and hallucinations and pathologic excitement. The side-effects are tabulated as allergy-like manifestations; "trophic" and endocrine effects; and neurologic effects. The chief neurologic effect, parkinsonism, is often (but not always) to some degree a necessary accompaniment of therapeutic benefit in treatment of psychoses, and should be managed by manipulation of dosage and use of Cogentin in addition to the active drug. These drugs are particularly effective in treatment of schizophrenia, manic-depressive psychoses in the manic group (and synergistically with electro-shock in the depressed group), and organic delirium. They represent a distinct advance in pharmacologic treatment of psychoses.

—

MARKLE FOUNDATION SCHOLARS

The John and Mary R. Markle Foundation announces the appointment of 25 Scholars in Medical Science, all faculty members of medical schools in the United States and Canada. The sum of $750,000 has been appropriated

NEW
RESEARCH ON
ERYTHROPOIETIN
EXPLAINS
CLINICAL SUPERIORITY OF



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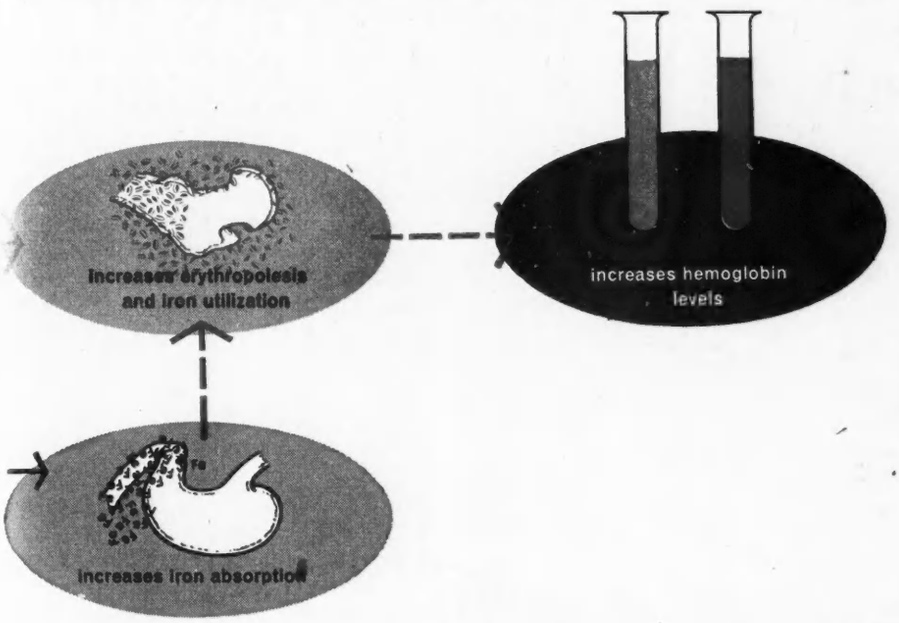
towards their support in the schools where they will teach and do research. The 25 scholars were selected from 57 candidates nominated by medical school deans, and include four associated with Canadian universities: Queen's University Faculty of Medicine, Kingston, Ont. for Robert F. Hetherington, M.D., D.Phil., assistant professor, effective July 1; currently McLaughlin Travelling Fellow — neurological surgery. University of Saskatchewan College of Medicine, Saskatoon, Sask., for Gerald H. Holman, M.D., assistant professor; currently fellow of Johns Hopkins Hospital—pædiatric endocrinology. University of Alberta Faculty of Medicine, Edmonton, Alta., for Lionel E. McLeod, M.D., lecturer; currently McLaughlin Travelling Fellow — internal medicine. University of Western Ontario Faculty of Medicine, London, Ont., for Donald P. Swartz, M.D., lecturer after July 1; current resident at Johns Hopkins Hospital — obstetrics and gynæcology.



Elucidation of the action of erythropoietin—the erythropoietic hormone—provides a clear explanation for the observations of Holly,[1] Ausman,[2] Tevetoglu[3] and many others who have reported that in the common anemias cobalt-iron therapy results in a clinical response superior to that produced by iron alone.

Increased Iron Absorption and Utilization—Recent investigations show that cobalt enhances the formation of erythropoietin.[4,5] This hormone increases the rate of production of new red cells which, in turn, increases the rate of both iron utilization by the marrow and iron absorption from the intestine.[6]

Clinical Application—In simple *iron deficiency anemia*, 89% of patients treated with Roncovite exceeded 12 Gm. of hemoglobin per 100 cc., while only 33% of the same patients treated with iron alone for a comparable period reached this level.[2] In *anemia of pregnancy*, 98.2% of Roncovite-treated patients maintained their hematologic status; 63.8% delivered with a hemoglobin of 13 Gm. per 100 cc. or more.[1] In *anemia of infancy and childhood* an average hemoglobin level of only 8.7 Gm. per 100 cc. was attained with iron alone while the same patients subsequently reached an average hemoglobin level of 11.6 Gm. per 100 cc. with Roncovite.[3]

Roncovite-MF is the new therapeutic agent based on erythropoietin formation which translates this new research into the practical utility of full iron effectiveness with greatly decreased, better tolerated iron dosage.

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Maximum adult dosage: one tablet after each meal and at bedtime.
Supplied: Bottles of 100 tablets.

Bibliography available on request.

PSITTACOSIS

Heggl (*Schweiz. med. Wchnschr.*, 88: 64, 1958) describes three forms of psittacosis: (1) influenzal; (2) typhoid; and (3) pulmonary. The disease is much more widespread than generally thought, for many mild cases are not recognized. These mild cases, among which are many resembling or possibly identical with Wassermann-positive pneumonitis, may be due to psittacosis transmitted by pigeons. The latter form a large and important reservoir of this disease. Diagnosis is confirmed by complement fixation. Treatment of choice is with tetracyclines.

DENTAL CARIES IN AUSTRALIAN CHILDREN

The National Health and Medical Research Council of Australia has recently published a monograph entitled "Dental Survey of State School Children in New South Wales", by P. D. Barnard of the Institute of Dental Research, Sydney. He and his colleagues examined a sample of 6787 children aged 6 to 15 years in New South Wales by carefully standardized and clinical methods. The data they collected substantiate the statement often made that people of Australia have nearly the worst teeth in the world. Dental caries was widespread amongst the children, with 98.5% of teeth affected, and 88.7% permanent teeth. Moreover it was of considerable magnitude, for the number of decayed, missing, and filled permanent teeth per child was 6.6. It is difficult to compare figures for different countries, but results suggest that the most carious teeth are found in New Zealand, with Denmark second, and New South Wales third. It is noted that this is associated with a low fluoride content of water supplies, for only two such supplies were found to contain more than 0.3 p.p.m. fluoride. Significantly enough, in these two areas the caries experience was very much lower. It was also found that in two institutions where children were subjected either to a standard regimen of meal hours with little consumption of food between meals, or to a diet with

(Continued on page 56)

MEDICAL NEWS *in brief*

(Continued from page 55)

restriction of intake of refined carbohydrates, caries incidence was significantly low. The author states that there is a clear need for (a) more intensive health education of child and parent, including instruction in nutrition; (b) greater facilities for treatment; (c) institution of the practice of fluoridation; (d) research.

SURGERY OF THE TEMPOROMANDIBULAR JOINT

In an article concisely reviewing conditions affecting the temporomandibular joint, Stuart Gordon of Toronto (*Am. J. Surg.*, 95: 2, 1958) points out that frequently in subluxation there is no apparent causative factor. The patients, over half of whom are young females, first complain of clicking and later of pain, locking and restricted mobility. Careful assessment is necessary before advising surgery, bearing in mind that in many the condition seems to resolve spontaneously. Dental adjustments for malocclusion are often beneficial. The author's practice for the past three years has been to excise and replace the intra-articular disc with a polyethylene cap.

It is pointed out that frank dislocation is another entity or may develop with an antecedent course of subluxation. Although usually anterior, the condition may be manifested posteriorly, medially, laterally or upwards. In these latter instances the dislocation is accompanied by fracture, either of the mandibular condyle or of an associated structure. After reduction, interdental wiring to restrict opening the mouth to 1 cm. although effective in the first dislocation is usually of no use in the recurrent type. Several surgical methods are referred to, including the author's operation of creation of a new external ligament by use of fascia lata between zygomatic arch and the condyle.

Early surgical drainage may save this joint in cases of suppuration which may follow scarlet fever or any disease which produces a bacteræmia. In others or in instances of chronic arthritis, good results may be expected in the majority of patients in whom excision of the eroded mandibular head is carried out. Interposition of some substance such as tantalum is advocated to prevent union.

ARTHRITIS AND RHEUMATISM

A new journal entitled *Arthritis and Rheumatism* has just appeared in the United States. This is the official organ of the American Rheumatism Association and is intended to serve the needs of both the clinician and the research worker by reporting not only clinical experience but also research in basic sciences such as pathology, immunology, biochemistry and pharmacology. Its Editor-in-Chief is Dr. William S. Clark, Associate Professor of Medicine, Western Reserve University, and he is supported by a strong editorial board (including Dr. Donald C. Graham of the University of

(Continued on page 62)

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1. Proctor, R. C.: Dis. Nerv. Sys. 18:223 1957. 2. Feuss, C. D., and Gragg, L., Jr.: Dis. Nerv. Sys. 18:29, 1957. 3. Coats, E. A., and Gray, R. W.: Dis. Nerv. Sys. 18:191, 1957. Registered Trademark: Quiactin

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MEDICAL NEWS *in brief*

(Continued from page 56)

Toronto). The journal will cover the fields of rheumatoid arthritis, nonarticular rheumatism, osteoarthritis, infectious arthritides, rheumatic fever, collagen diseases and gout. It will run original articles, progress reports, review articles, editorials, synopses in Interlingua, book reviews and official notices of news from the American Rheumatism Association. Beginning with an issue in the first week of February, the journal will appear bi-monthly. Subscription price to non-members is $11.00 in Canada. Enquiries to the publishers, Grune and Stratton, Inc., 381 Fourth Avenue, New York 16, N.Y.

MYOCARDIAL INFARCTION DUE TO ACCIDENTS

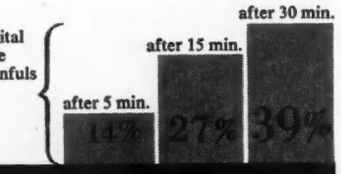
Two Berlin physicians, Gulzow and Bruning (*Deutsche Gesundhwes.*, 12: 1473, 1957), survey the known clinical and legal questions in connection with myocardial infarction following accidents. The authors set out useful guides for a physician faced with a case in which he has to decide whether the accident was responsible for the development of myocardial infarction, and to what extent it contributed to its development if coronary disease preexisted. Of 43 claims which they were asked to study, only five were recognized in which the accident was definitely causally related to the infarction. Medical assessment of percentage liability due to the accident as a contributing factor is considered by the authors as unjustified. The doctor should merely limit himself to such expressions as "slight", "moderate" and "considerable". The insuring agency should do the estimating of compensation or pension.

SERUM CHOLESTEROL STUDIES IN JAPAN, HAWAII AND LOS ANGELES

Studies on the diet, the serum cholesterol and the frequency of atherosclerosis and coronary heart disease were made by Keys *et al.* (*Ann. Int. Med.*, 48: 83, 1958), in Japanese in Japan, where coronary heart disease is rare, in Hawaii, where it is fairly common but less so than among local Caucasians, and in California, where the local Japanese are similar to the local Caucasians in regard to the frequency of the disease. In middle age, coronary heart disease is at least 10 times as common in the United States as in Japan.

In 475 Japanese the serum cholesterol concentration showed a linear relationship to the percentage of calories provided by fats in the diet from a low among farmers at Koga, and a slightly higher average among miners at Shime, Japan, to a high among Nisei in Los Angeles, who were not significantly different from local Caucasians in this respect. These differences (averaging 96 mg. per 100 ml. comparing 40- to 49-year-old Koga farmers, eating less than 10% fat calories, with Los Angeles Nisei of the same age, eating 39% fat calories) were accounted for by beta lipoprotein cholesterol, the alpha fraction showing no significant variation. These differences are not accounted for by differences in climate, relative obesity, physical activity, the use of alcohol and tobacco, the concentration of protein in the diet or the intake of "essential" fatty acids.

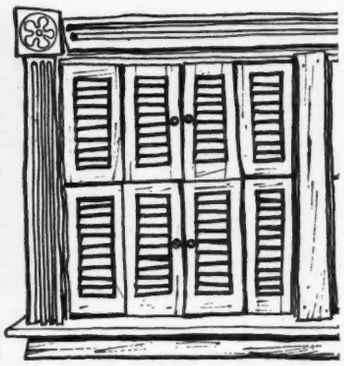
Progressive increases in vital capacity following a single oral dose of five tablespoonfuls of Elixophyllin. (Average increase in 30 minutes – 807 cc.)*



Average vital capacity of 20 patients in acute asthmatic attack was 2088 cc. before treatment.*

*Spielman, D.: Ann. Allergy 15:270, 1957.

AIR HUNGER in ASTHMA



RELIEVED IN MINUTES BY ORAL DOSAGE...

74% of severe attacks terminated by oral medication

Fifty unselected patients admitted for emergency room treatment of severe acute asthmatic attacks were given 75 cc. Elixophyllin *orally* instead of intravenous aminophylline. Of these, 37 (74%) were completely relieved and discharged without further treatment – 9 responded to additional therapy – 4 were hospitalized as status asthmaticus cases.

– Schluger, J., et al.: Am. J. M. Sci. 234:28, 1957.

Each tbsp. (15 cc.) contains: THEOPHYLLINE 80 mg., ALCOHOL 3 cc.
Bottles of 16 fl. oz. available at prescription pharmacies – Rx only.

ELIXOPHYLLIN

Gastric intolerance rarely encountered.
Literature upon request

Sherman Laboratories
Windsor, Ontario

The findings on the Japanese are consistent with the theory that an important factor in producing differences in the frequency of coronary heart disease in populations is the proportion of calories in the diet provided by fats, particularly the common saturated fats.

TENTH ANNIVERSARY OF THE WORLD HEALTH ORGANIZATION

April 7, the traditional date on which World Health Day is observed, will this year mark the tenth anniversary of the World Health Organization. At an international health conference held in New York in 1946, sixty-one governments laid down new principles for international health cooperation and embodied them in the Constitution of the World Health Organization, which came into force two years later. These nations have since been joined by twenty-seven others.

TREATMENT OF CEREBRAL ARTERIOVENOUS ANOMALIES

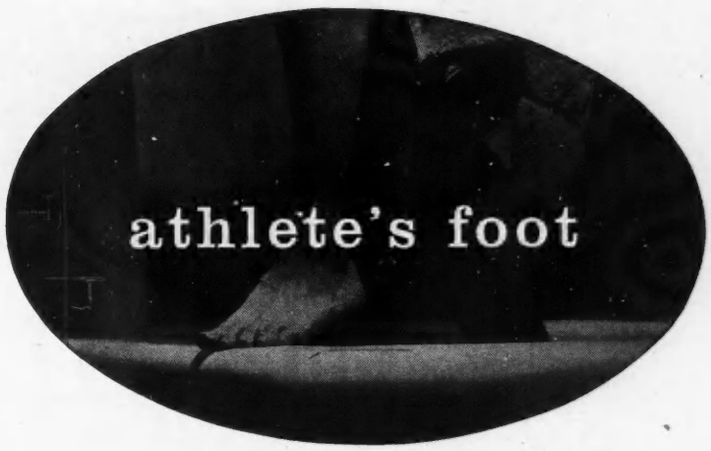
Carotid ligature as a method of treatment of arteriovenous shunts in the brain is being abandoned. This intervention may cause more harm than good. Svien and Hooker of the Mayo Foundation (*Proc. Staff Meet. Mayo Clin.*, 32: 741, 1957) measured the pressure in the retinal arteries of a patient who harboured a large arteriovenous anomaly. Retinal arterial pressure on the side of the lesion was 30/10 mm. Hg as against 70/35 on the opposite side. This finding confirms the clinical observation made by Olivecrona and Riives to the effect that in the course of cerebral angiography on such patients the contrast medium tended to enter the lesion regardless of the side of the neck in which it was injected. Considering that occlusion of the carotid artery is sufficient in itself for consistently reducing the pressure in the ipsilateral retinal artery, the performance of such a procedure where the pressure is already reduced by the presence of an arteriovenous lesion may bring it down further and by shunting more blood away from uninvolved portions of the brain may become detrimental to it.

BENGER PRIZES FOR ORIGINAL OBSERVATIONS IN GENERAL PRACTICE

The first Benger awards have been made to general practitioners by Benger Laboratories Limited of 20 Spadina Road, Toronto, and Cheshire, England, after adjudication by the British College of General Practitioners. The Benger prizes, which are given annually, are intended for general practitioners and based on essays covering original observations by general practitioners on diagnosis or therapy.

For the 1957 prizes nearly 100 entries were received from 12 different countries. We are happy to note that the winner of the first prize of $700 was a Canadian general practitioner, Dr. E. H. Evans of Rockingham, Nova Scotia, who submitted an essay on "The susceptible state to viral infections". The second and third prizes went to practitioners in England.

The response to the 1957 Benger prizes has been so encouraging that it has been decided to continue the prizes in 1958. Further information may be obtained from Benger Laboratories, 20 Spadina Road, Toronto 4.



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fast relief from itching

prompt antimycotic action

continuing prophylaxis

NIGHT and DAY treatment

AT NIGHT — Desenex Ointment (zincundecate) 1 oz. tubes.

DURING THE DAY — Desenex Powder (zincundecate) — 1½ oz. container.

ALSO — Desenex Solution (undecylenic acid) — 2 fl. oz. bottles.

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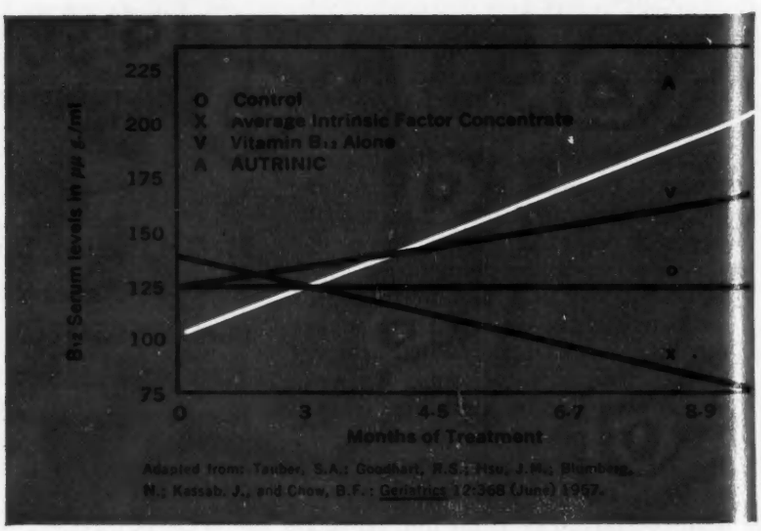

Adapted from: Tauber, S.A.; Goodhart, R.S.; Hsu, J.M.; Blomberg, M.; Kassab, J., and Chow, B.F.: Geriatrics 12:368 (June) 1957.